Using this Manual

Though the SSMIII is designed for fault diagnosis operations using an interactive user interface, there may be times that you will need to refer to this manual to find out more about using more complex procedures. When performing actual fault diagnostic work, you should also refer to the Service Manual.
Click the title in contents to go to the relevant page.

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Introduction

The SSMIII is a powerful fault diagnosis device that has been developed using the latest advanced technology. Used in combination with a PC, it provides a tool for quick and efficient analysis of vehicle faults.
Application software running on a PC provides an interactive user interface for very simple operation.
High-speed communication with the engine control system and transmission control system help to make checking of various phenomena faster than ever before.
Be sure to carefully read this manual in combination with the Service Manual to develop fault diagnostic skills by using SSMIII functions to their fullest.
Note that the illustrations and display screens shown in this manual may differ from those of the actual SSMIII due to specification modifications.

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List of Abbreviation

Abbreviation	Spell-out
A/C	Air Conditioner
A/F	Air/Fuel ratio
ABS	Anti-lock Brake System
AC	Alternating Current
ACC	Accessory
AET	AT Engine Torque request
ASSY	Assembly
AT	Automatic Transmission
ATF	Automatic Transmission Fluid
AWD	All Wheel Drive
BIU	Body Integrated Unit
BMP	Bit MaP
CAM	Camshaft
CAN	Controller Area Network
CD	Compact Disk
CD-ROM	Compact Disk Read Only Memory
CF	Compact Flash
CID	Calibration Identification
CNG	Compressed Natural Gas
COM	Common
CPC	Canister Purge Control solenoid valve
CR	Crankshaft
CSV	Comma Separated Values
DC	Direct Current
DCCD	Drivers Control Center Differential
DRL	Daytime Running Lights
D-sub	D subminiature
DTC	Diagnostic Trouble Code
EAM	Engine AT Masking flag
ECM	Electronic Control Module
EGR	Exhaust Gas Recirculation
ETC	Electronic Throttle Control system
FWD	Front Wheel Drive

Abbreviation	Spell-out
IC	Integrated Circuit
ID	Identification
IG	Ignition
ISC	Idle Speed Control
LAN	Local Area Network
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LH	Left Hand
LSD	Limited Slip Differential
MIL	Malfunction Indication Lamp
MT	Manual Transmission
NSM	New Select Monitor
OBD	On Board Diagnosis
OCV	Oil flow Control solenoid Valve
OS	Operating System
OSV	Oil Switching solenoid Valve
P/W	Power Window
PAK	Pack
Pass	Passing
PC	Personal Computer
PTC	Positive Temperature Coefficient
PV	Power system supply Voltage *1
RAM	Random Access Memory
RH	Right Hand
ROM	Read Only Memory
RTC	Real Time Clock
SAE	Society of Automotive Engineers
SDI	SUBARU Diagnostic Interface
SDR	SUBARU Driving Recorder
SI	International System of Units
SSMIII	SUBARU Select Monitor III
SW	Switch
TCM	Transmission Control Module
TCS	Traction Contorol System
TGV	Tumble Generator Valve

Abbreviation	Spell-out
TPMS	Tire Pressure Monitoring System
Tr	Transistor
USB	Universal Serial Bus
VDC	Vehicle Dynamics Control
VVL	Variable Valve Lift
VVT	Variable Valve Timing

*1: There are two power supplies, “Power system supply voltage” actuates an actuator and “Sensor system supply voltage” activates a sensor.

Before Starting Diagnosis

Handling Precautions

- The SDI is a precision measuring instrument. Prevent water, oil, grease or other substance from getting on the SDI.
- Never try to take the SDI or its bundled items apart.
- Never disconnect the diagnosis cable from the vehicle data link connector or the SDI while the system is ON. Doing so can damage the SDI.
- Never insert or remove a CF card while SDI power is turned on.
- Always insert the bundled dummy card in the card slot when not using a CF card.
- Take care to avoid damage to the LCD of the SDI. Should the LCD panel ever become cracked and start leaking liquid, do not touch the liquid. If you get the liquid on your skin, immediately flush the exposed area with large volumes of water. Should you experience any skin abnormalities, consult with a skin specialist immediately.
- Whenever using the SSMIII for fault diagnosis while the vehicle is in motion, never allow the driver to operate the SSMIII or SDI.

SSMIII Features

The SSMIII is a fault diagnosis device that provides a standard means of automotive fault diagnosis. It communicates with the various system control modules equipped in a vehicle to monitor control module input/output data, and to allow checking and deletion of diagnostic codes generated by the control module. It also provides means to reset control module learning values and other control parameters, and to force operation of engine control system actuators.

1) Bi-directional Communication with Vehicle Electronic Control Modules (ECM)
   The SSMIII makes it possible to perform bi-directional communication between a PC and each of a vehicle's on-board ECMs via a SUBARU Diagnostic Interface (SDI). This makes it possible to monitor ECM data, check ECM diagnostic codes, and force operation of actuators.

2) Powerful Application Software
   Application software running on a PC provides an interactive user interface for very simple operation. A hierarchical menu system simplifies routine operations, even for novice users.

3) Communication Functions
   The SDI communicates directly with the vehicle's ECMs, while transfer between the SDI and PC is performed over a high-speed USB 1.1 connection. The SDI is also equipped with card slots, creating hardware architecture that can support both wired and wireless LAN communication between the SDI and PC.

4) Multilingual Support
   The SSMIII supports five languages: English, French, German, Spanish, and Japanese.
   The language switches automatically in accordance with the language of the operating system running on the connected PC, eliminating operator confusion.

5) Data Sampling
   Data sampling is performed for all items, which eliminates the chance of the operator forgetting to obtain required data. After all data is sampled and stored, specific data items can be recalled for analysis as required. Communication speed is fast enough to support normal diagnosis without any problem. This system can be configured to select measurement items during sampling, which switches the communication protocol for high-speed data communication.
   Switching is performed at intervals of some tens of ms, so phenomena can be reliably recorded, even if they have a very short life. (This capability is available with engines and transmission control systems that employ the latest communication protocol.)

6) Digital Data Display
   Data is displayed on a PC monitor making it easier to view.
   Though the number of items that can be displayed depends on the size of the PC monitor screen and the font size, typically more than 25 items can be displayed simultaneously.

7) Graph Data Display
   Data displayed on PC monitor in color greatly facilitates interpretation and analysis of diagnostic phenomena. Graph line colors can be specified as desired, which makes it possible to display graphs that suit individual preferences and needs.

8) Diagnosis Cable
   A standard SAE J1962 connector is used on the end of the cable that connects to the vehicle.
   The end that connects to the SDI is a highly durable D-Sub 44-pin connector.
   The length of the cable is a convenient 2.3 m (7.5 ft). Reprogramming work can also be performed using this cable.

9) USB cable
   Since communication between the PC and SDI is performed using USB 1.1 protocol, a USB cable is used to connect the PC and SDI.
   The cable is 3 m (10 ft) long, which allows computer analysis even when the PC is located at a considerable distance from the vehicle.

10) SDI Cushioning Rubber
   Cushioning rubber attached to SDI absorbs shock and protects the interface from damage if it is dropped.

Switching the SDI Mode

SDI Mode Types

There are four SDI modes.

- Driving Recorder Mode
- Stand-alone Mode (CF Application Diagnosis Mode)
- System Mode (SDI System Mode)
- PC Application Mode

The following sections provide details about using each mode.

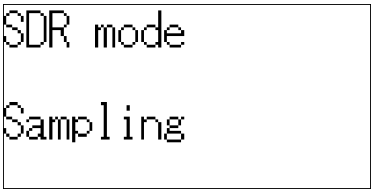
Switching a Mode

Driving Recorder Mode

The Driving Recorder Mode is the initial default mode when SDI power is turned on. Exiting any of the other modes always enters the Driving Recorder Mode. That is, unless any other mode is operated, the SDI maintains the Driving Recorder Mode.

NOTE:
A special setting file is required only when using the Driving Recorder Mode. If there is no setting file on the CF card when the Driving Recorder Mode is entered, the message “No Setting File in CF Card” appears on the SDI display. Lack of a setting file presents no problem if the Driving Recorder Mode is not used.

Driving Recorder Mode Screen



SMU-00548

Stand-alone Mode

To enter the Stand-alone Mode, hold down both the [MENU] key and the [C] key of the SDI for at least two seconds, during the Driving Recorder Mode, or at the initial screen of the PC Application Mode.
Exiting the Stand-alone Mode automatically enters the Driving Recorder Mode.

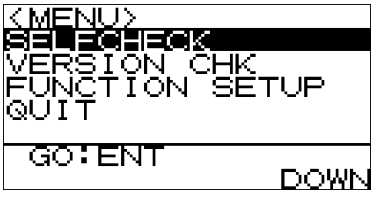
Stand-alone Mode Initial Screen

SMU-00513

System Mode

To enter the System Mode, hold down the SDI’s [MENU] key as you turn on the SDI.
Exiting the System Mode automatically enters the Driving Recorder Mode.

System Mode Initial Screen

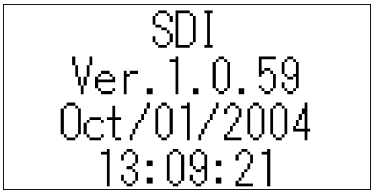


SMU-00322

PC Application Mode

The SDI will enter the PC Application Mode automatically whenever you start up the PC application on the computer and execute various diagnostics, sampling or registration while in any other mode.
Exiting the PC Application Mode automatically enters the Driving Recorder Mode.

PC Application Mode Screen



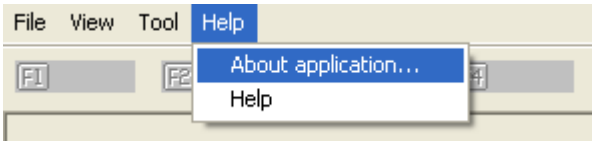
SMU-00519

Display Software Version Information

To display software version of PC application and CF application, perform the following procedure.

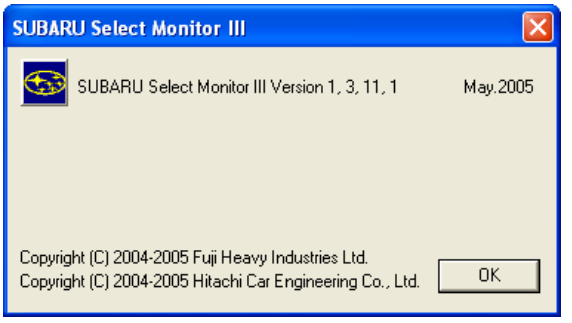
PC Application Version Information

1. Double-click the SSMIII icon on the PC screen to start up the application.
2. Select “About application” from “Help” in menu.



SMU-00810

3. This displays version information as shown below.



SMU-00811

NOTE:

- To confirm version information, it is not necessary to connect a PC to vehicle. The version information can be displayed on a PC alone.
- In High-Grade Roughness Monitor sampling screen, the version information of Roughness Monitor will be displayed.
- To confirm the functions supported in displayed version (for software currently installed), see “SSMIII revision history”.

CF Application Version Information

1. Turn on the SDI.
2. Press the both [MENU] key and [C] key on the SDI at the same time more than two seconds.
3. The version information shown below is displayed few seconds before Initial Menu screen of Stand-alone Diagnosis is displayed.

SMU-00812

Starting Up the System

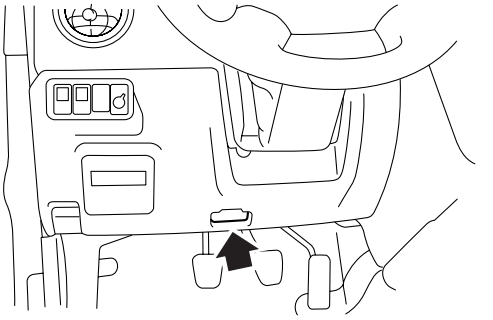
With the SSMIII, the PC application communicates via the SDI with the control modules for which SSMIII diagnosis is supported. In order to enable normal communication, start up the SSMIII using the procedure described below.

NOTE:

- Power from the vehicle's battery is supplied to the SDI via the fault diagnostic cable.
- If you use the SSMIII when the vehicle's battery is low, then a communication error may occur when the engine is started. This is caused by a drop in the voltage as a large current flows to the starter motor, because the SDI stops operating. If this happens do the following.
  1. To continue testing for faults after starting the engine, after starting the engine press the [PWR] key on the SDI to turn on the power, then restart the SSMIII operation.
  2. To do fault diagnosis while the engine is running, charge the battery completely before doing the fault diagnosis.
- If the PC has more than one USB port, the PC USB port where the SDI is connected when you install the USB driver will become the special SSMIII port. Whenever using the SSMIII, always connect the USB cable to the special SSMIII port only.

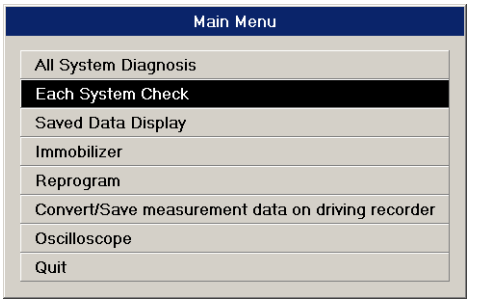
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle's ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application. This causes the Main Menu to appear.



SMU-00600

Main Menu Items

Explanations of each of the Main Menu items are provided below. Select the item you want on the Main Menu to perform fault diagnostic word, to configure settings, and to perform other tasks.

All System Diagnosis

Selecting this item displays on a single screen the fault detect status of all control system control modules for which SSMIII diagnosis is supported, and memorized diagnostic codes.

Each System Check

Selecting this item makes it possible to select a particular system from among the control systems for which SSMIII diagnosis is supported, and perform fault diagnosis.
This item can be used to view input/output data of the system control modules that perform fault diagnosis, memorized diagnostic codes, and other data on the PC display.
This menu item is also used after repair work is complete to delete diagnostic codes, to configure control module settings, etc.

Saved Data Display

This item can be used to save various data sampled during fault diagnosis operations, and to load data for viewing after work is complete.

Immobilizer

This item performs immobilizer registration.

Reprogram

This item performs reprogramming of the control module.

Read CF application measurement data

This item performs reading stand alone measurement data saved in a CF card to hard disk of your PC.

Convert/Save measurement data on driving recorder

Loads data sampled on the driving recorder to the PC from the CF card, and converts and saves that data.

Oscilloscope

After attaching the optional pulse/analog cartridge to SDI, connect the pulse/analog box to the SDI and using pulse/analog probe to perform analog sampling.

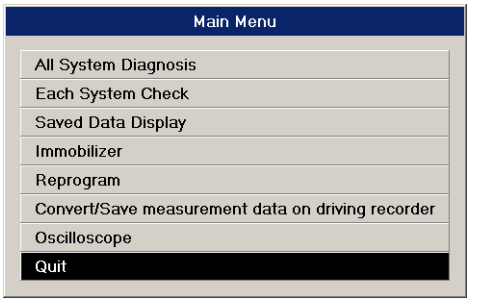
NOTE:

- A message may appear during system startup instructing you to update the PC application. If it does, install the newest version of the PC application as soon as possible.
- SDI power will turn off automatically if you leave the diagnosis cable connected to the SDI and do not perform any operation on the PC for a certain period. This is indicated when the PWR LED of the SDI goes out.
  If this happens, press the SDI [PWR] key to turn it back on again.

Quitting the System

1. On the Main Menu, select [Quit] and then press the Enter key or left-click with the mouse.

   You can also quit the system by selecting [Quit] on the [File] menu, by clicking the F12 Exit button on the function Key Bar, or by pressing the F12 function key on the PC keyboard.



SMU-00568

2. Confirm that the PC application is no longer running, and turn off the vehicle ignition key.
3. Disconnect the diagnosis cable from the vehicle data link connector. The SDI is turned off when the diagnosis cable is disconnected.

NOTE:
The SDI can also be turned off by holding down both the [MENU] key and the [DOWN] key of the SDI for at least two seconds.

4. Disconnect the diagnosis cable and the USB cable from the PC and SDI.

NOTE:
The PC application settings listed below are remembered whenever the system is exited. These settings are automatically restored the next time the PC application is started up.

- Display order of Digital Data Screen and Graph Screen items
- Display cell width settings

- Data select function setting items
- Graph Screen range settings
- Graph Screen graph line colors and thicknesses
- Display language
- Display unit settings
- Display font settings
- Print settings

Wireless LAN Communication

The normal communication method (connection method) between PC and SDI is by USB cable, but when a wireless LAN card is used, wireless LAN communication without a USB cable is possible.
This chapter explains the setting method for wireless LAN communication when the following environment is used.

<Use environment>

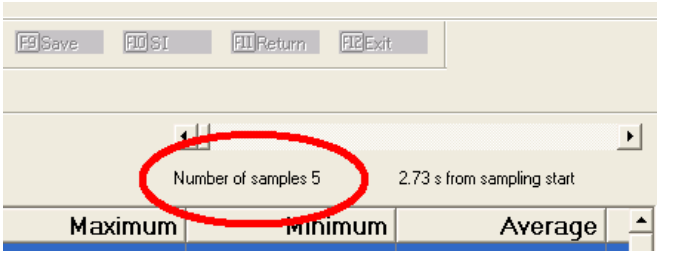
OS:Windows XP or Windows 2000
Wireless LAN: PC built-in or external type (PC card slot)

Caution items

- When a wireless LAN is used, immobilizer registration, reprogramming, CF application installation, and SDI firmware updating cannot be done. Use a USB connection for execution of these functions. (The illustration is an example for updating the SDI firmware.)

SMU-00993

- Switch off the SDI power supply before inserting or removing a wireless LAN card. When a wireless LAN card is inserted or removed while the SDI power is switched on, the inside of the wireless LAN card may become damaged.
- As wireless LAN communication is communication by radio waves, the communication status deteriorates when the communication distance between PC and SDI increases. The confirmation status can be confirmed with the “NET” lamp of the PC wireless LAN card or the “Number of samples” of the sampling status bar. If the communication status has become bad, reduce the distance between PC and SDI to improve the communication status. The system configuration is so that data measuring is possible even when the communication status has deteriorated and the sampling number is not displayed continuously, but when the communication status deteriorates extremely, communication errors may occur. (However, data display is not possible when the communication has been cut completely.)

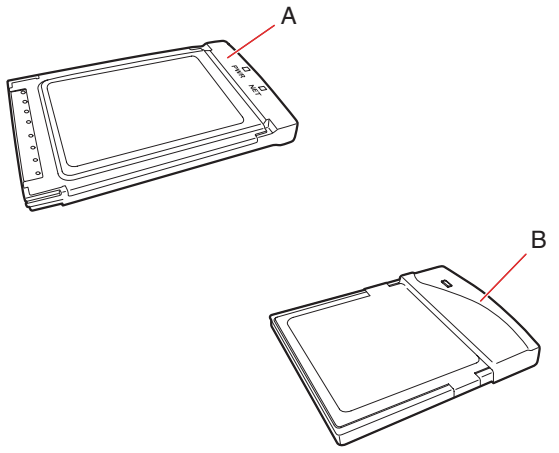


SMU-00982

- Do not use a wireless LAN in countries not shown in the following list, as approval according to the radio law has not been obtained.

Australia	Japan
Bulgaria	Malta
Canada	Netherlands
Chile	New Zealand
China	Norway
Cyprus	Poland
Czech	Portugal
France	Saudi Arabia
Germany	Singapore
Greece	Spain
Guam	Sweden
Hawaii	Switzerland
Iceland	Taiwan
Ireland	Turkey
Israel	U. K.
Italy	USA

Parts required for wireless LAN communication



SMU-01023

A: PC with built-in wireless LAN or external wireless LAN
B: Wireless LAN card for SDI

NOTE:
A CD-ROM is enclosed with the wireless LAN card for SDI, but it is not used. SDI requires no driver installation.

Outline of the wireless LAN connection procedure

Explanations are provided only for Windows XP.

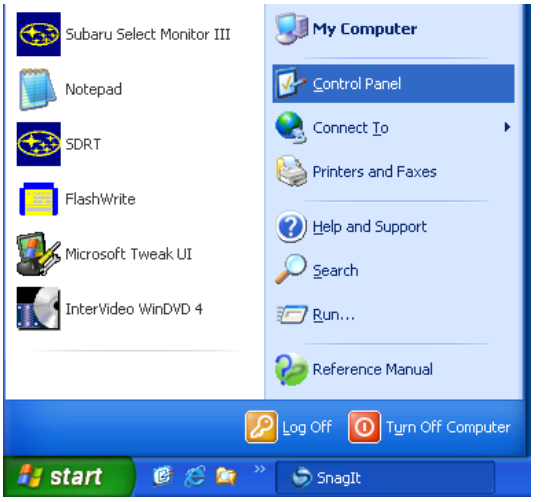
1. Install a wireless LAN for the PC.
2. Set the SDI side to wireless LAN.
3. Switch the SDI connection method from USB to wireless LAN.

NOTE:
In case of Windows 2000, use your wireless LAN utility and perform setting for wireless LAN communication.

Wireless LAN setting on the PC side

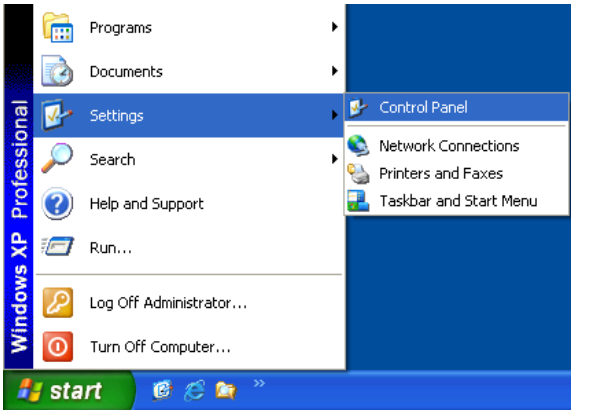
Explanations are provided only for Windows XP.
In case of an external type, connect the wireless LAN card and install the driver on the PC.

1. Click “Start” on the taskbar and select “Control Panel”.



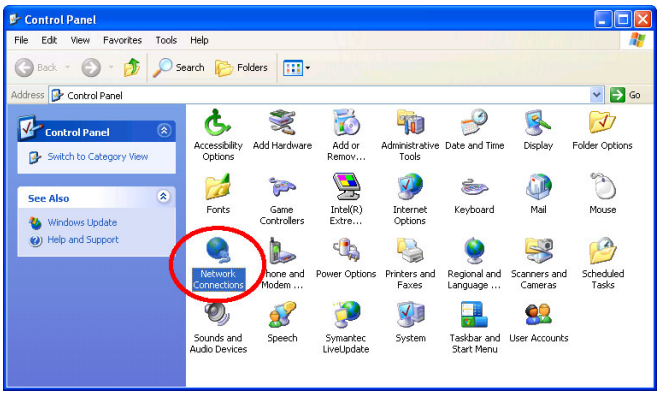
SMU-00983

NOTE:
Depending on the PC display settings, click “Start” and select “Control Panel” from “Settings”.



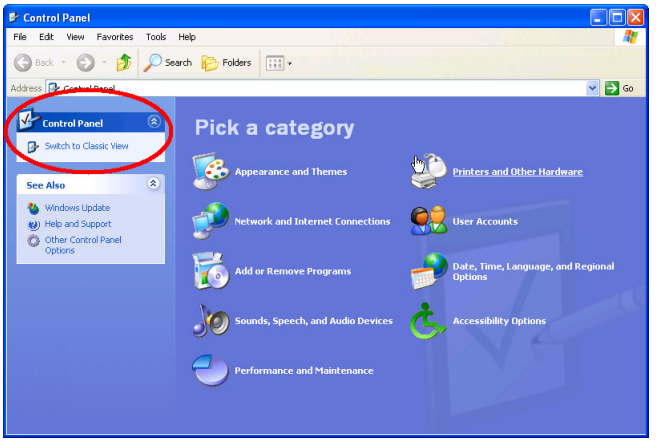
SMU-00984

2. The control panel is displayed. Double-click “Network Connections”.



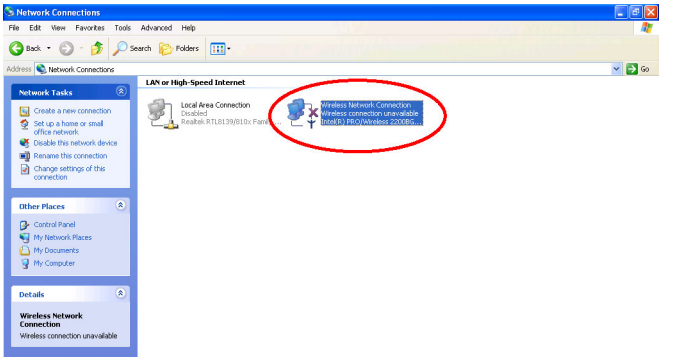
SMU-00985

NOTE:
Depending on the display settings of the PC, there may be no “Network Connections”. In this case, click “Switch to Classic View” to switch the screen display.



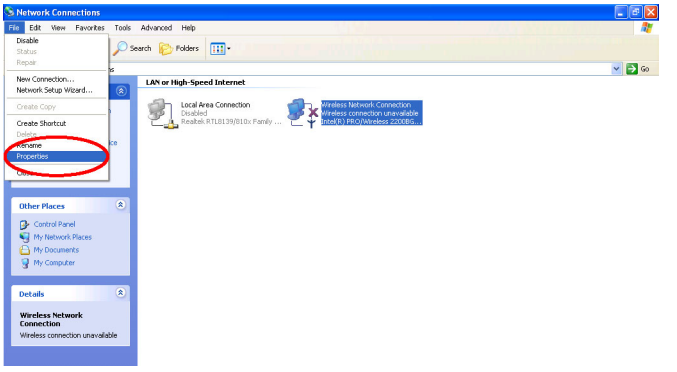
SMU-00986

3. The screen “Network Connections” is displayed. Select “Wireless Network Connections”.



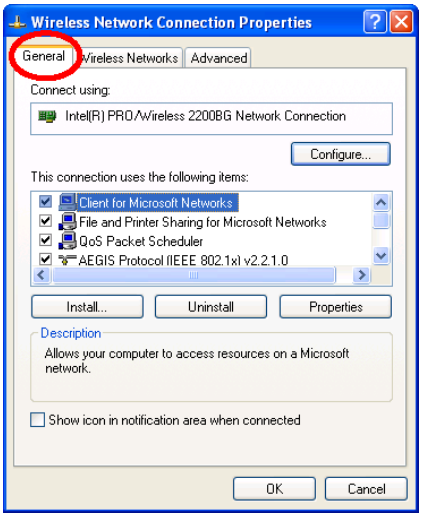
SMU-00987

4. Select “Properties” from “File” in the menu.



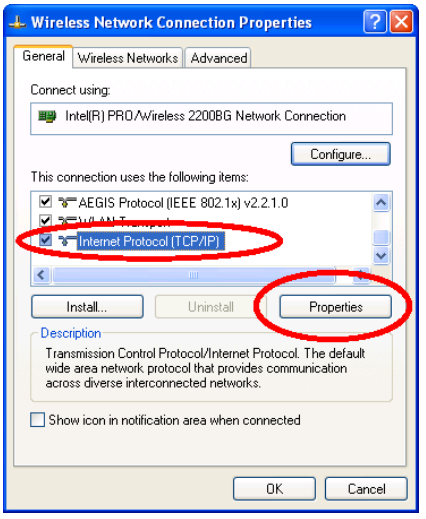
SMU-00988

5. The screen “Wireless Network Connection Properties” is displayed. Select “General”.



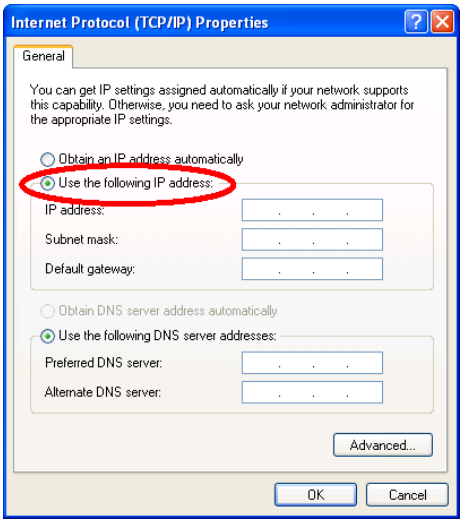
SMU-00989

6. Select “Internet Protocol (TCP/IP)” and click the “Properties” button.



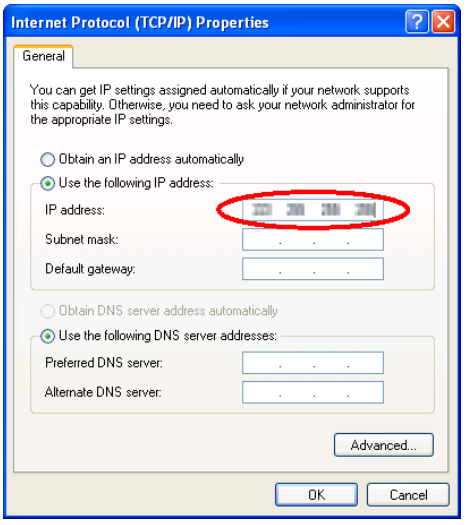
SMU-00990

7. Check “Use the following IP address:”.



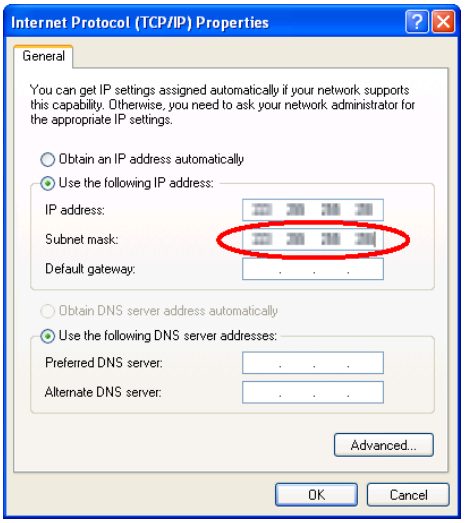
SMU-00991

8. Enter the address to “IP address”. Refer to “SS-MIII wireless LAN communication” enclosed with the SDI wireless LAN card for the characters to be entered.



SMU-00992

9. Enter numbers for “Subnet mask”. Refer to “SS-MIII wireless LAN communication” enclosed with the SDI wireless LAN card for the characters to be entered.

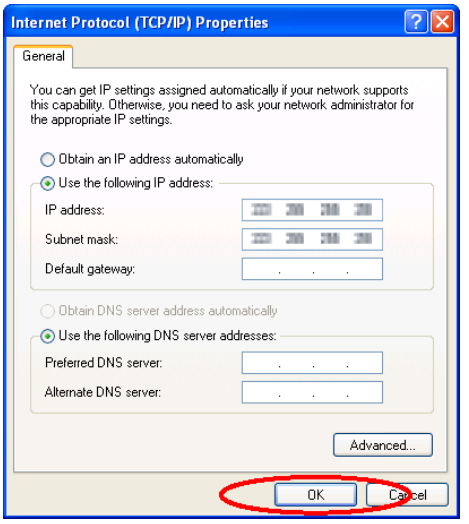


SMU-00994

10. Do not enter anything for “Default gateway” and leave the field blank.

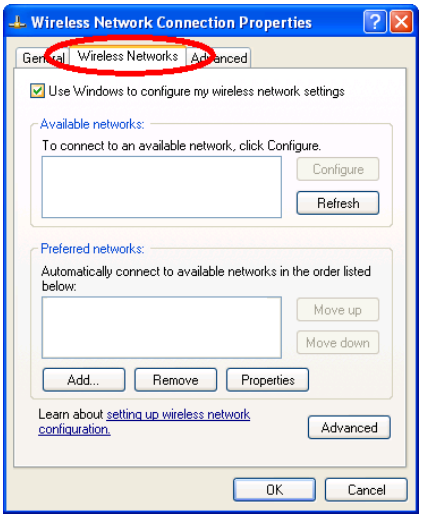
11. Do not enter anything for “Preferred DNS server” and “Alternate DNS server” and leave the fields blank.

12. After confirmation of the entered setting contents, click the button [OK] and close the window.



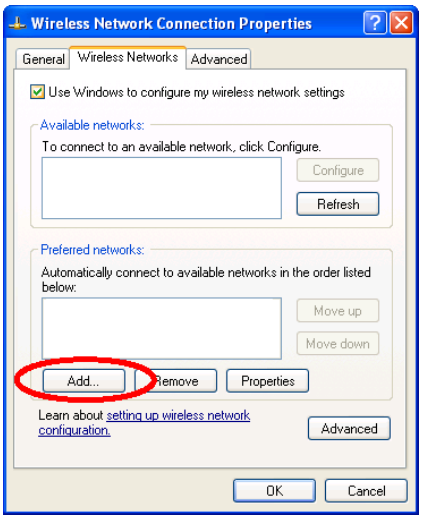
SMU-00995

*13.*Select the tab “Wireless Networks”.



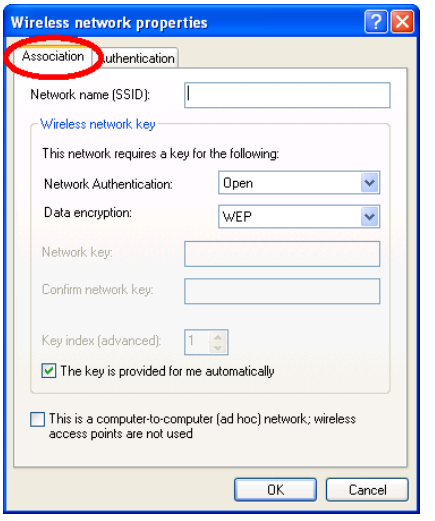
SMU-00996

*14.*Click the button “Add…”.



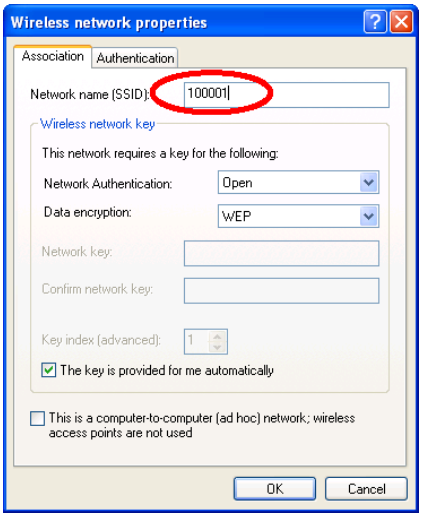
SMU-00997

*15.*The screen “Wireless Network Properties” is displayed. Select the tab “Association”.



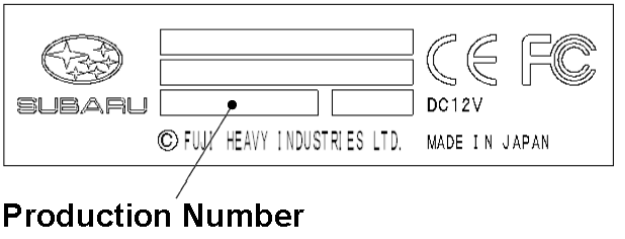
SMU-00998

*16.*Enter the production number of the communication SDI in “Network Name (SSID)”. (Here, “100001” is entered as an example.)



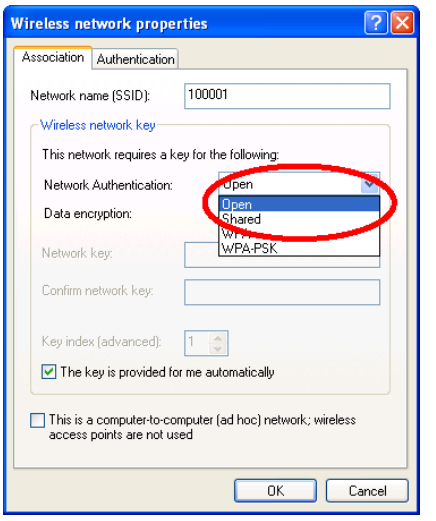
SMU-00999

NOTE:
The SDI Production Number is shown on the seal on the side of the SDI.



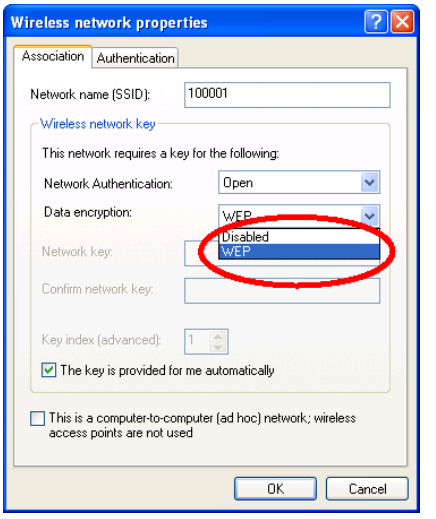
SMU-01000

*17.*Select “Open” for “Network Authentication”.



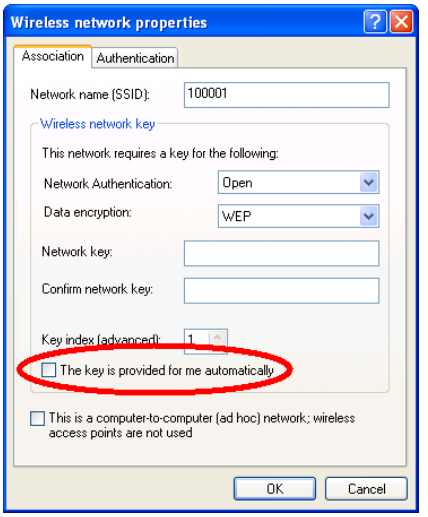
SMU-01001

*18.*Select “WEP” for ”Data encryption”.



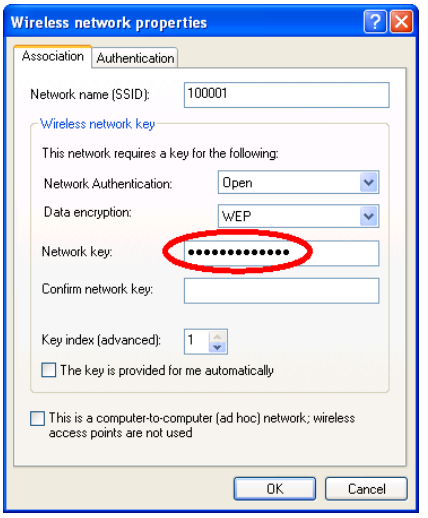
SMU-01002

*19.*Uncheck “The key is provided for me automatically”.



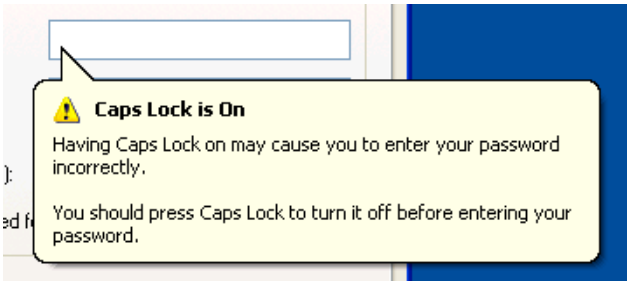
SMU-01003

*20.*Enter an encryption key (alphanumeric) for “Network key”. Refer to “SSMIII wireless LAN communication” enclosed with the SDI wireless LAN card for the characters to be entered.



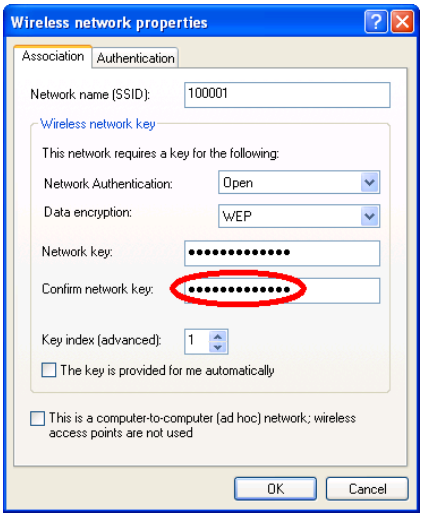
SMU-01004

NOTE:
Enter the network keys using lower case letters. In case of input in “CapsLock” status (upper case letters), an warning message is displayed.



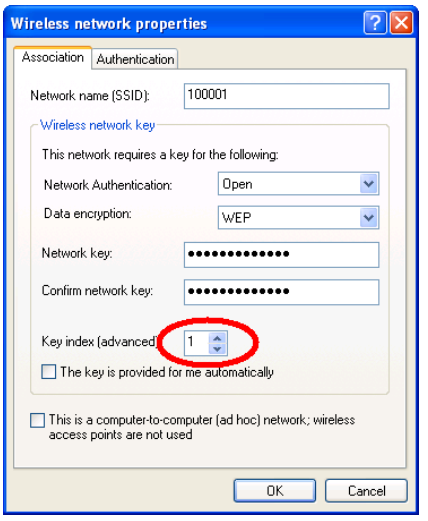
SMU-01005

*21.*Enter the same characters as for “Network key” also for “Comfirm network key”.



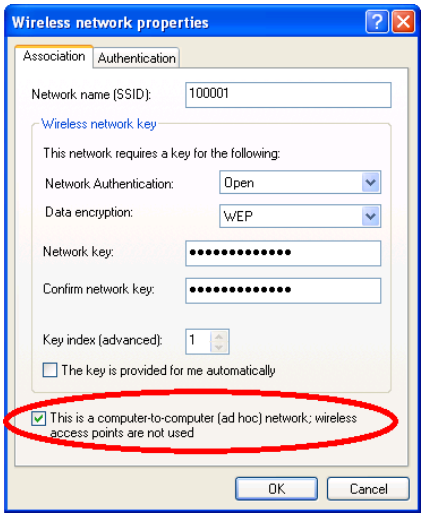
SMU-01006

*22.*Set “1” for “Key index (advanced)”.



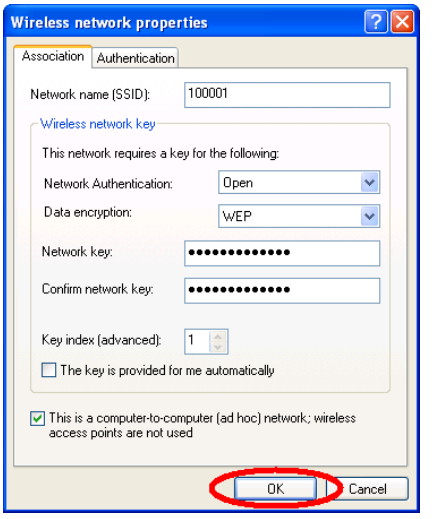
SMU-01007

*23.*Enter a check for “This is a computer-to-computer [ad hoc] network: wirelss access points are not used”.



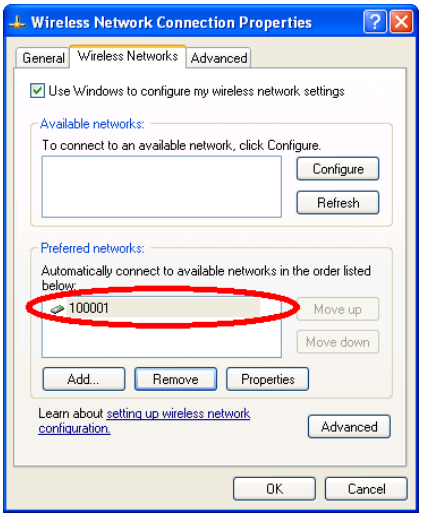
SMU-01008

*24.*When setting has been completed, click the button [OK] and close the window.



SMU-01009

*25.*Confirm creation of a profile with the same number as entered for “Network name (SSID)” in the preceding step in the column “Preferred networks” and click the button “OK” to close the window.



SMU-01010

*26.*This completes the wireless LAN setting on the PC side.

Wireless LAN setting on the SDI side

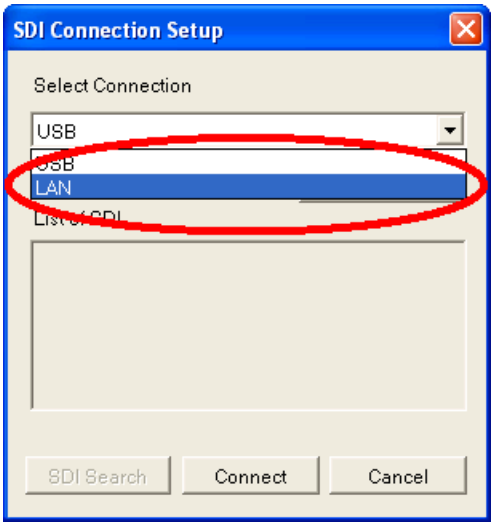
1. Insert an SDI wireless LAN card into the CF card slot of the SDI.

NOTE:
The wireless LAN card must be inserted to the CF card slot CF2, the lower one, of the SDI.

2. Connect SDI and PC with a USB cable.
3. Switch on the SDI power.
4. Start SSMIII (PC application).
5. Click the F11 Connect botton on the Function Key Bar of the main menu screen or press function key F11 of the PC.

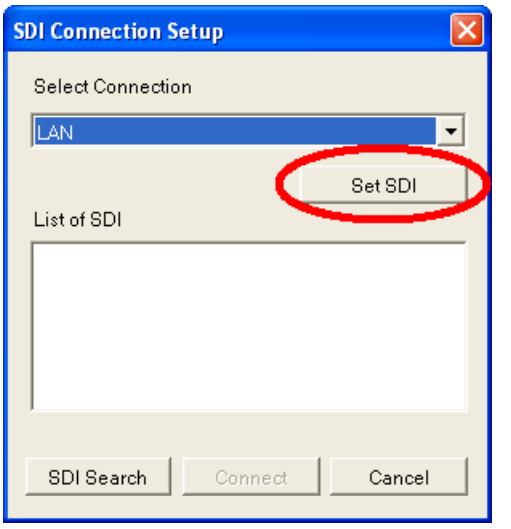
SMU-01011

6. The screen “SDI Connection Setup” is displayed. Select “LAN” for “Select Connection”.



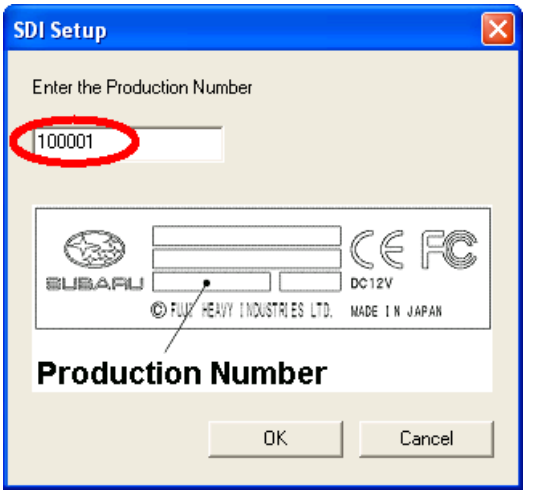
SMU-01012

7. Click the button “Set SDI”.



SMU-01013

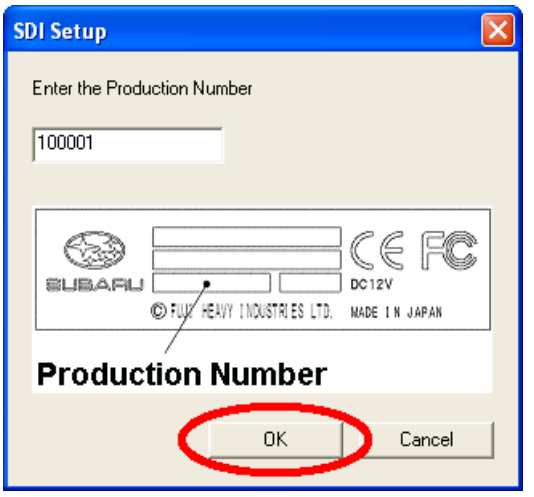
8. The SDI setting window is displayed. Enter the Production Number. (Here, “100001” is entered as an example.)



SMU-01014

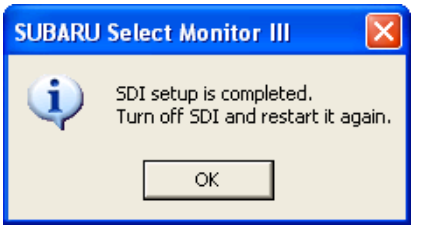
NOTE:
The number entered here is the same as the number entered for “Network Name (SSID)” with “Wireless LAN Setting on the PC Side”. If a different number has been entered, change it to the same number. In case of a different number, communication between SDI and PC cannot be established.

9. Confirm the entered number and click the button [OK].



SMU-01015

10. The setting completion message is displayed. Click the button [OK].

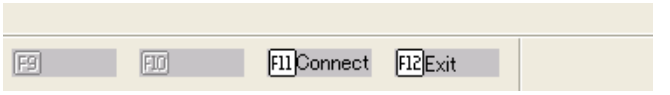


SMU-01016

11. Restart the SDI.

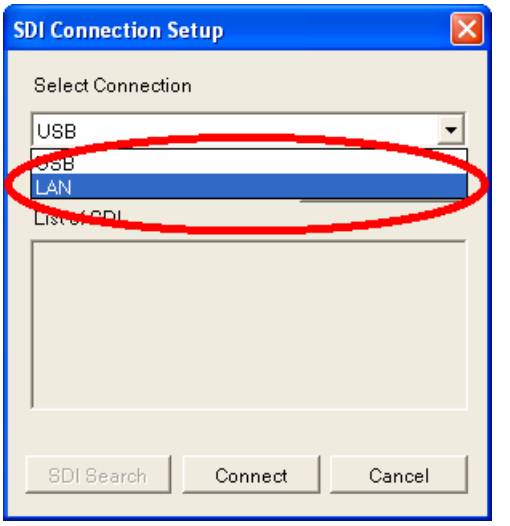
Switching to wireless LAN connection

1. Wait until communication between PC and SDI has been established.
2. When communication has been established, start the SSMIII (PC application).
3. Click the F11 Connect button on the Function Key Bar of the main menu screen or press function key F11 of the PC.



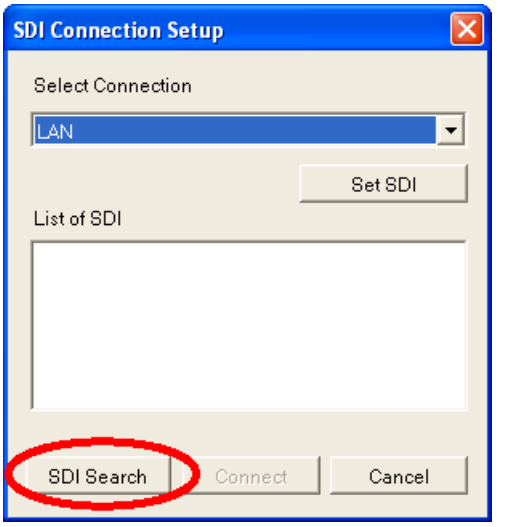
SMU-01011

4. The screen “SDI Connection Setup” is displayed. Select “LAN” for “Select Connection”.



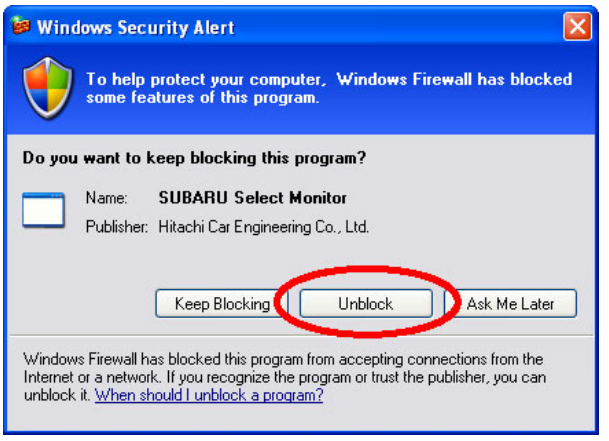
SMU-01012

5. Click the button “SDI Search”.



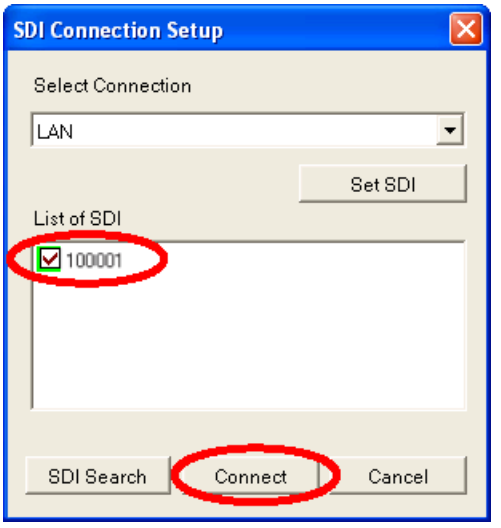
SMU-01017

NOTE:
In some cases, depending on Windows Security setup, the screen shown below appears. If so, click “Unblock”.



SMU-01038

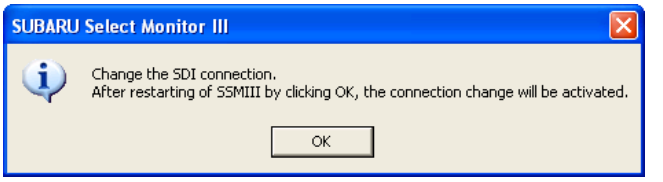
6. The SDIs which can be connected are shown in “List of SDI”. Enter a check for the SDI to be connected to and click the button “Connect”.



SMU-01018

NOTE:
At this time, restart the PC if no SDIs possible for connection are displayed.

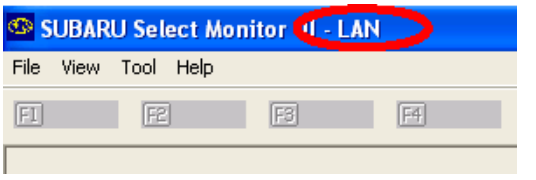
7. The SDI connection setting change message is displayed. Click the button [OK].



SMU-01019

8. The PC application is shut down automatically. Restart the PC application.

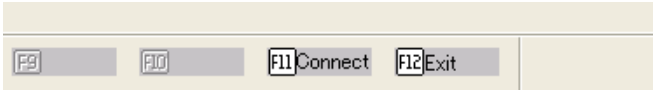
NOTE:
- From this time on, the connection method for PC and SDI is wireless LAN.
- The present connection method for PC and SDI is shown on the title bar at the left top of the screen.



SMU-01020

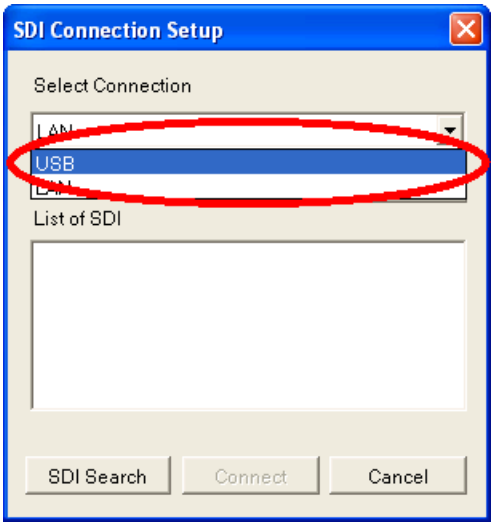
Switching to USB connection

1. Start SSMIII (PC application).
2. Click the F11 Connect button on the Function Key Bar of the main menu screen or press function key F11 of the PC.



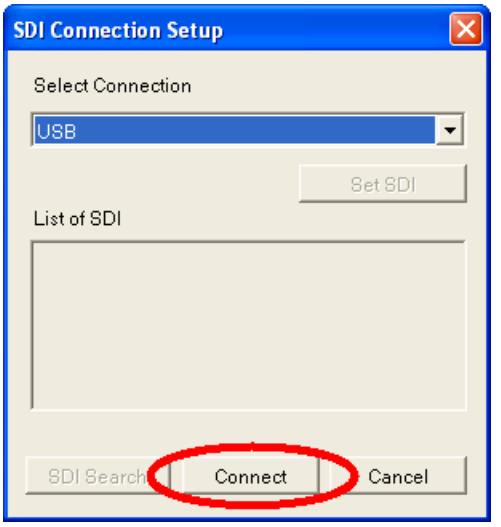
SMU-01011

3. The screen “SDI Connection Setup” is displayed. Select “USB” for “Select Connection”.



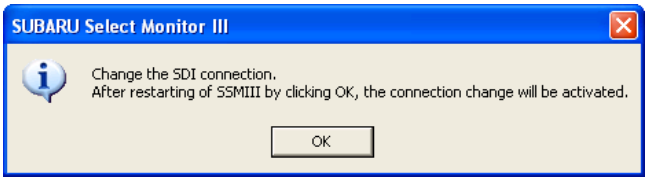
SMU-01021

4. Click the button “Connect”.



SMU-01022

5. The SDI connection setting change message is displayed. Click the button [OK].



SMU-01019

6. The PC application is shut down automatically. Restart the PC application.

NOTE:
From this time on, the SDI connection method becomes “USB”.

When using equipment already set for wireless LAN

1. Insert a wireless LAN card into the SDI and switch on the SDI power.
2. Wait until communication between PC and SDI has been established.
3. When communication has been established, start the SSMIII (PC application).
4. Afterwards, select and execute the desired function.

NOTE:
Once wireless LAN setting has been completed, connection setting or change by clicking the function key bar is not required.

List of terms related to Wireless LAN communication

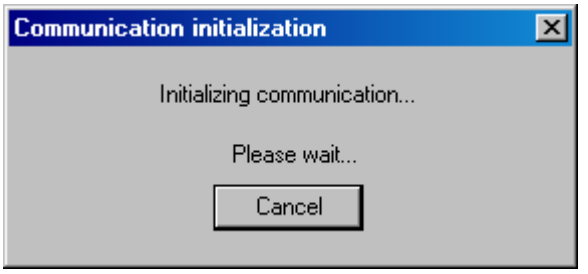
Term	Meaning
ASCII	Abbreviation of American Standard Code for Information Interchange. A general system of specific characters allotted to recognition of characters and symbols by a computer.
DNS server	“DNS” is the abbreviation of “Domain Name System”. A system for converting a domain name corresponding to the name of a computer on the Internet to an IP address.
IEEE	Abbreviation of Institute of Electrical and Electronic Engineers. The Institute of Electrical and Electronic Engineers has established standards for electronic parts, communication methods, etc.
IP address	“IP” is the abbreviation of Internet Protocol. An identification number allotted to a network, a connected computer, or communication equipment. This corresponds to the address of a computer on the network.
LAN	The abbreviation of Local Area Network. A network for connection of computers, printers, etc. for data exchange.
OS	The abbreviation of Operating System. This is the overall management software acting as go-between between PC hardware and various applications for keyboard input, screen output, and other I/O functions etc.
PC card	A standardized expansion card for notebook computers.
SSID	The abbreviation of Service Set Identifier. This is something like a group name in the network, and communication is possible only when the same SSID has been registered between terminals.
TCP/IP	This is the abbreviation of Transmission Control Protocol/Internet Protocol. This is a protocol used as standard on the Internet etc.
WEP	This is the abbreviation of Wired Equivalent Privacy. This is data encryption technology for wireless LAN communication. For wireless LAN communication between computers, a common encryption key (like a password) is set, and the data cannot be deciphered when the encryption keys are not the same.
Autorun	A function for automatic program start when a CD is set to the CD-ROM drive.
Gateway	This is a computer or software for connection of a computer network to another network using different media or protocols.
Subnet mask	A value defined for identification of a gigantic network like the Internet and a small network connecting computers etc. underneath it.
Driver	Software acting as go-between for OS control of peripheral equipment with different specifications and control methods for each product.
Network key	An encryption key used with a wireless LAN.
Protocol	A protocol for communication between computers via a network.
Wireless LAN card	A communication expansion card installed in a personal computer for LAN communication with wireless transmission and reception of data.
Wireless access point	A device relaying electric waves for connection of terminals for wireless LAN communication.

Communication Messages

With the SSMIII, the PC application communicates via the SDI with the control modules for which SSMIII diagnosis is supported.
While the PC application is performing a communication operation, various messages appear on the display to indicate communication status. The following explains the meanings of the messages that appear.

Communication Initialization

This message appears when the PC application starts communication with a control module for which SSMIII diagnosis is supported.
To interrupt communication, click the Cancel button.



SMU-00542

Communication Error

The error code and error message appear when communication between the PC application and control module is no longer possible for some reason.
For details about error code and the actions required to correct the problem, see the Communication Error Code List.

SMU-00119

NOTE:
If an error occurs but an error message does not appear, restart the PC application and the SDI. When restarting the SDI, either disconnect the diagnosis cable from the vehicle's data link connector, or hold down both the [MENU] key and the [DOWN] key of the SDI for at least two seconds to turn the SDI off, and then confirm that the PWR LED of the SDI does not light. Then turn on the SDI power again.

All Systems Diagnosis

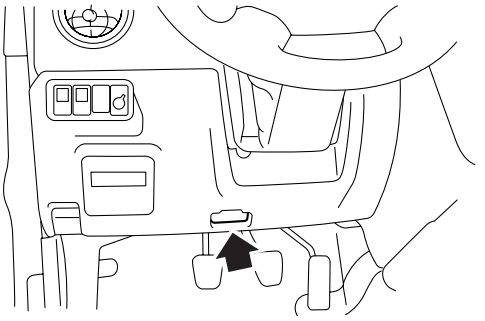
Selecting this item displays the fault detect status of all control system control modules for which SSMIII diagnosis is supported, and memorized diagnostic codes.
When a particular control system cannot be identified as the causes of a vehicle's problem, perform this diagnosis and use the displayed diagnostic codes to perform diagnosis.

NOTE:
- For a vehicle equipped with a cruise control system, turn on the cruise control switch before performing inspection.
- This inspection mode may not function in the case of certain vehicle models and vehicle specifications.

Getting Ready

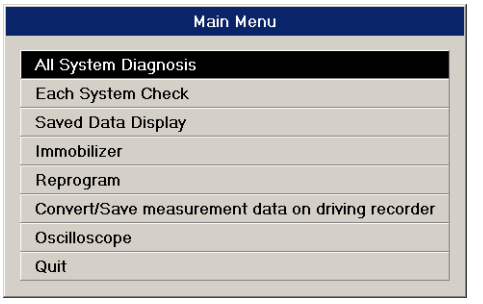
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



SMU-00113

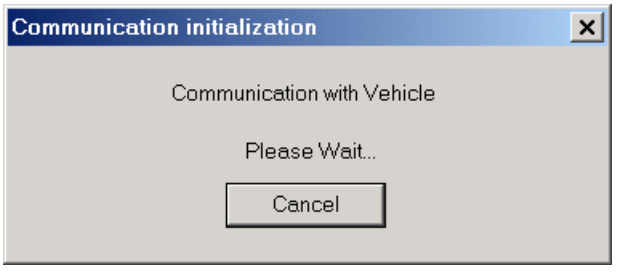
3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle's ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [All System Diagnosis] and then press the Enter key or left-click with the mouse.



SMU-00599

The SSMIII displays the screen shown below when the control system and communication system are started up.

To cancel the diagnosis, click the Cancel button.



SMU-00123

Diagnosis Result Display

A screen appears showing the fault detection status of all of the control system control modules, and diagnostic codes that indicate details about the faults.

Code	Description & trouble position	Trouble occurrence record	IG counter
Engine Control System			
No Diagnostic Code Present			
Cruise Control			
No Diagnostic Code Present			
Transmission Control System			
No Diagnostic Code Present			
Brake Control System			
No Diagnostic Code Present			
Number of Diagnostic Code(s): 0			

SMU-00124

NOTE:
- The message "No Diagnostic Code Present" indicates that no fault could be detected.
- The message "Communication Impossible" appears when the vehicle being inspected is not equipped with the required control systems, or when something prevents communications from being performed.

Each System Check

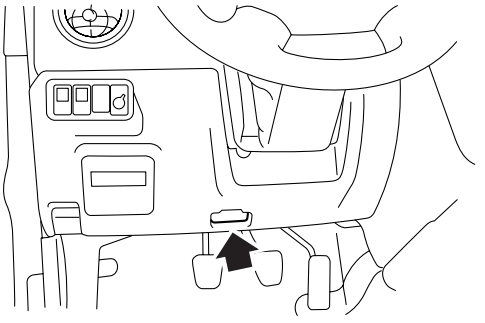
This type of inspection allows selection of a particular system from among the control system for which SSMIII diagnosis is supported. Then control module input/output data, memorized diagnostic codes, and other data can be viewed on the PC display. This screen can also be used to delete diagnostic codes memorized by a control module, to perform inspections by forcing operation of actuators, to configure control module function settings, etc.

NOTE:
- For diagnosis of the cruise control system or auto air conditioning system, turn on the system main switches before performing inspection.
- Some functions may not be available in the case of certain vehicle models and vehicle specifications.

Getting Ready

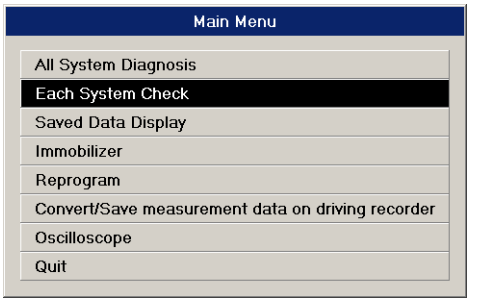
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



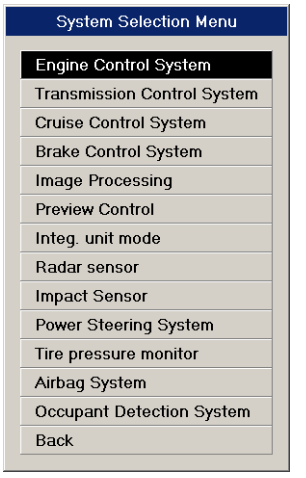
SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle's ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



SMU-00600

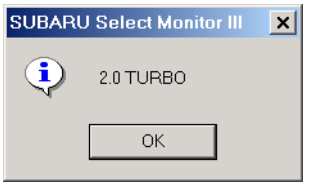
7. On the System Selection Menu, select the desired system and then press the Enter key or left-click with the mouse. (As an example, "Engine" is selected.)



SMU-00665

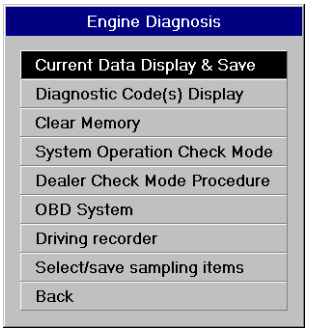
8. When the PC application starts communication with the control module of the selected system, a compliance verification message for the system being diagnosed appears. Click the [OK] button.

NOTE:
The compliance verification message that appears depends on vehicle model and specifications.



SMU-00128

This displays the fault diagnosis menu screen.



SMU-00601

NOTE:
- The contents of the fault diagnosis menu screen depend on vehicle model and specifications, and on the control system.
- Some inspection and adjustment items may not be available in the case of certain vehicle models and vehicle specifications.

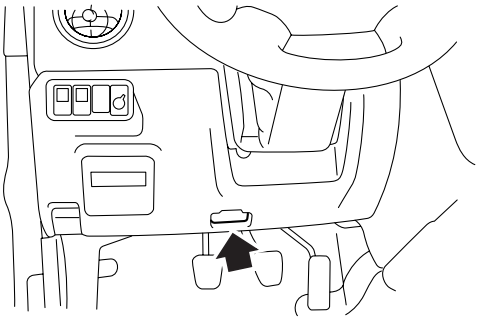
Current Data Display and Save

This system allows sampling of control module input/output data of control systems for which SSMIII diagnosis is supported, and sampling of control data.
This data can be displayed as digital data, and can also be switched to a graph data format.
Sampled data can also be assigned a name and stored as a file in a particular folder in PC memory.

Getting Ready

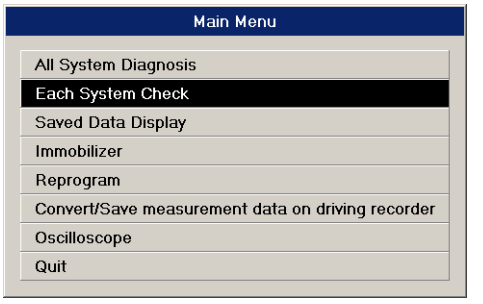
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



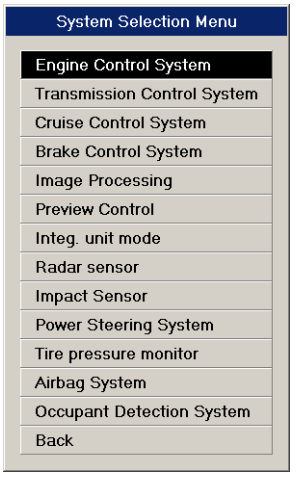
SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle's ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



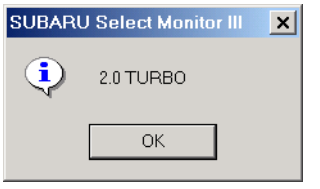
SMU-00600

7. On the System Selection Menu, select the desired system and then press the Enter key or left-click with the mouse. (As an example, "Engine" is selected.)



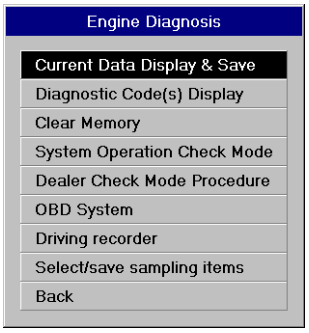
SMU-00665

8. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.



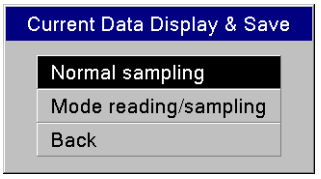
SMU-00128

9. From the list of fault diagnosis items, select [Current Data Display & Save] and then press the Enter key or left-click with the mouse.



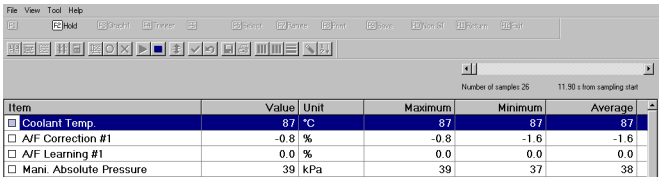
SMU-00601

10. This displays the dialog box shown below. Select [Normal sampling] and then press the Enter key or left-click with the mouse.



SMU-00508

11. This displays the Digital Data Screen and automatically starts sampling.



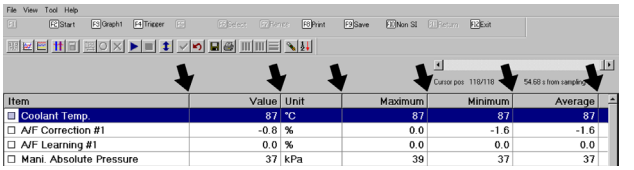
SMU-00569

The Digital Data Screen shows in real-time current values, maximum values, minimum values, and average values of control module's input/output data and control data.

Digital Data Screen Operations

Changing the Width of Screen Cells

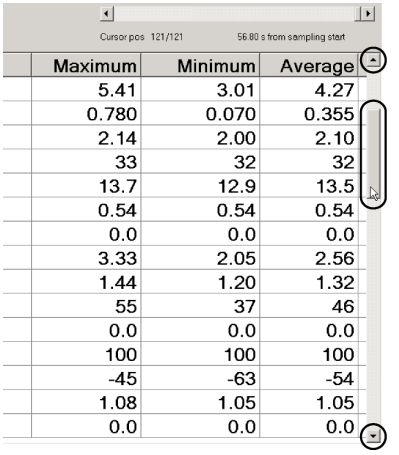
The widths of cells on the screen can be adjusted as desired. Move the mouse pointer to the arrow on the screen below so the cell width adjustment pointer appears. Then move the pointer left or right to adjust the cell width for easy reading.



SMU-00570

Scrolling the Screen

You can scroll the screen either by dragging the scroll bar on the right side of the screen, or by clicking the scroll button at the upper/lower end of the scroll bar.

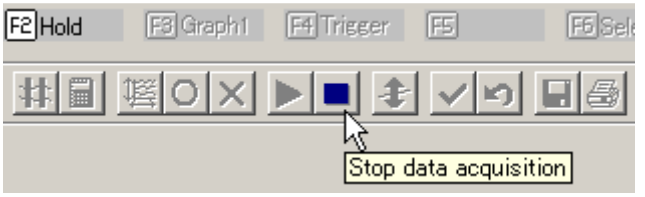


SMU-00137

NOTE:
Pressing the up or down arrow key on the PC keyboard will scroll the screen by one cell.
Pressing the Page Up or Page Down key on the PC keyboard will scroll one screen.

Stopping a Sampling Operation

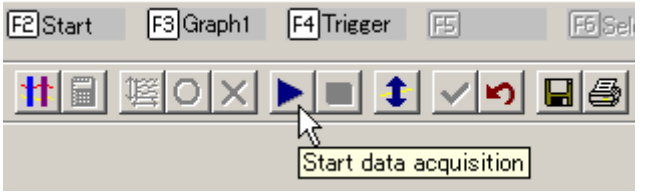
Click the ■ icon on the Data List Toolbar or the F2 Hold button on the Function Key Bar to stop sampling. You can also stop sampling by pressing the F2 function key on the PC keyboard.



SMU-00571

Starting a Sampling Operation

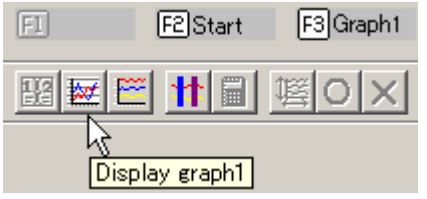
Click the ▶ icon on the Data List Toolbar or the F2 Start button on the Function Key Bar to start sampling. You can also start sampling by pressing the F2 function key on the PC keyboard.



SMU-00572

Switching to the Graph 1 Screen

If a sampling operation is being performed, stop it.
Click the icon on the Data List Toolbar or the F3 Graph1 button on the Function Key Bar to display the Graph 1 Screen.
Each press of the [F3] button on the Function Key Bar cycles in the following sequence: → [F3 Graph1] → [F3 Graph2] → [F3 Snapshot] →.
You can also display the Graph 1 Screen by pressing the F3 function key on the PC keyboard.

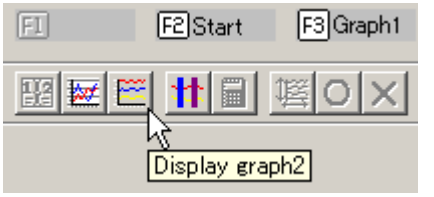


SMU-00573

Selecting Graph 2 Screen (Single-screen 8-channel Graph)

If a sampling operation is being performed, stop it.
Click the F3 Graph1 icon on the Data List Toolbar twice or click the button on the Function Key Bar to display Graph 2 Screen.

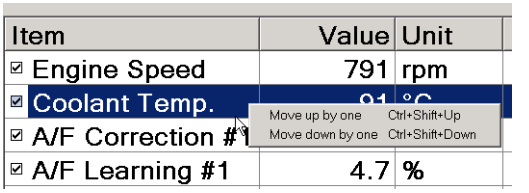
Each press of the [F3] button on the Function Key Bar cycles in the following sequence: → [F3 Graph1] → [F3 Graph2] → [F3 Snapshot] →.
You can also display the Graph 2 Screen by pressing the F3 function key on the PC keyboard twice.



SMU-00574

Changing the Item Sequence

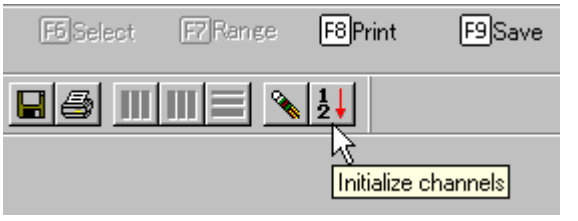
The sequence that the items appear on the display can be changed as desired.
Select the item you want to move. Next, while holding down both the Ctrl key and Shift key on the PC keyboard, press the up or down arrow key to move the selected item upwards or downwards.



SMU-00150

Initializing the Item Sequence

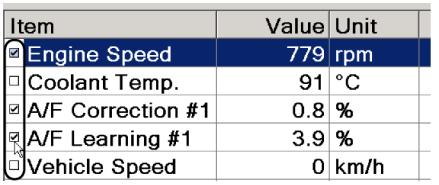
The items' sequence shown on the display can be initialized.
Clicking the icon on the Data List Toolbar makes the items go back to their initial positions.



SMU-00728

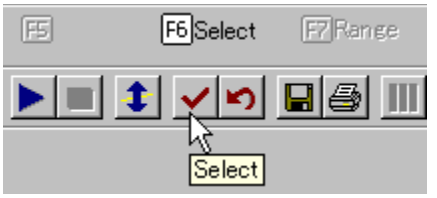
Data Select Screen

The Data Select Screen can be used to select particular data from all of the data sampled and view it.
When there is no sampling operation being performed, click the check box in front of the item you want to view. An item is selected for viewing when there is a check mark inside its check box. You can also select (check) the checkbox of the highlighted item by pressing the space bar on the PC keyboard.



SMU-00151

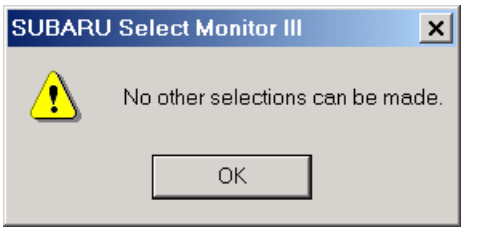
Click the icon on the Data List Toolbar or the F6 Select button on the Function Key Bar.
This will display the selected items only.
You can also display the selected items by pressing the F6 function key on the PC keyboard.



SMU-00575

NOTE:

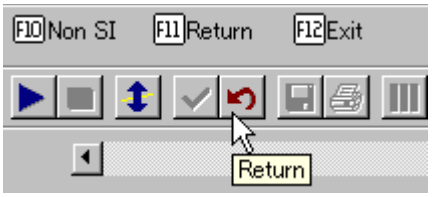
- Displaying selected data causes data sampled up to that point to be deleted.
- Sampling is faster when specific data items are selected. (This applies only to engine and transmission sampling.)
- If the message dialog box shown below appears while you are selecting data items, it means that the limit on the number of selectable data items has been reached. Selection of further data items is not possible after this message appears.
  To select other items, deselect the check boxes next to the currently selected (checked) items, and then select the new items.



SMU-00154

Returning to the All Data Screen

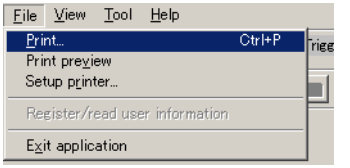
Click the icon on the Data List Toolbar or the F11 Return button on the Function Key Bar to display the All Data Screen. You can also return to the All Data Screen by pressing the F11 function key on the PC keyboard.



SMU-00576

Printing Sampled Data

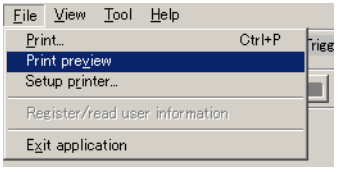
If a sampling operation is being performed, stop it.
Click the [File] menu and then select [Print]. You can also print by clicking the icon on the Data List Toolbar, by clicking the F8 Print button on the Function Key Bar, or by pressing the F8 function key on the PC keyboard.



SMU-00666

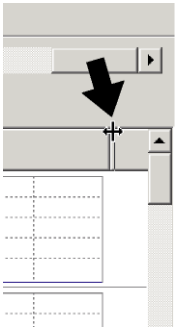
Previewing the Print Image

Print Preview lets you view the print image to confirm there are no problems before actually printing.
Click the [File] menu and then select [Print Preview].



SMU-00667

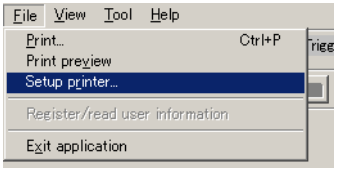
NOTE:
If part of the print image runs outside of the print area, use the arrow buttons at the bottom of the screen to adjust the cell width.
Moving the mouse pointer to an arrow will cause it to change to an adjustment pointer. Drag the adjustment pointer left or right to adjust cell width.



SMU-00162

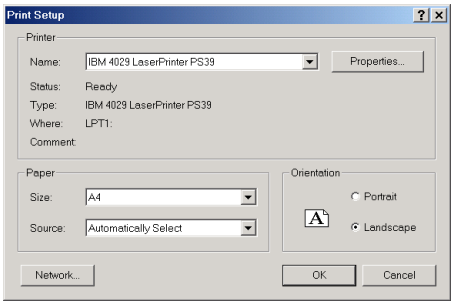
Setting Up the Printer

If a sampling operation is being performed, stop it.
Click the [File] menu and then select [Setup printer].



SMU-00668

After the Print Setup dialog box shown below appears, use [Printer Name] to select the printer to be used for printing.
Under [Orientation], select [Landscape] and then click the [OK] button.



SMU-00164

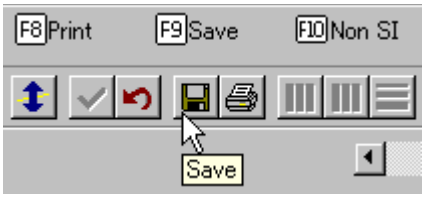
NOTE:
Though it is possible to print with the [Portrait] setting under [Orientation], doing so can cause part of the data to run outside of the printing area. Because of this, use of the [Landscape] setting is recommended.

Saving Sampled Data

There are two different ways to save sampled data: saving all sampled data and using cut-and-save to save only specific parts of the sampled data.

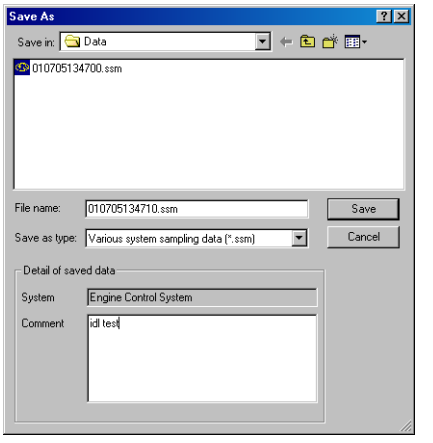
Saving All Sampled Data

If a sampling operation is being performed, stop it.
Click the icon on the Data List Toolbar, or the F9 Save button on the Function Key bar. You could also press the F9 function key on the PC keyboard.



SMU-00577

This causes the sampled data save dialog box to appear.
The name of the data file being saved is generated automatically in accordance with the current time and date. If you want to use the generated file name as-is, click the dialog box [Save] button. If you want to change to a different file name, type in the name you want.



SMU-00524

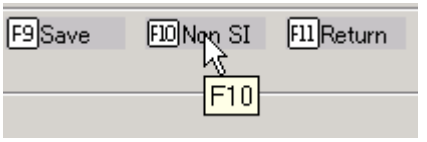
NOTE:
- Sample data files are saved in the Data folder where the PC application is installed.
  To change to another storage location, specify the location you want in the Save in box of the save data dialog box.
- The Comment box of the Save As dialog box can be used to save general comments associated with the data or file.

Saving Specific Sampled Data Using Cut-and-Save

For details about how to use cut-and-save to save specific sampled data, see “Two Cursor Analysis”.

Using Non-SI Units to Display Sampled Data

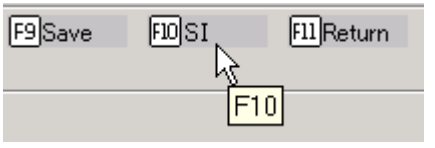
If a sampling operation is being performed, stop it. Click the F10 Non SI button on the Digital Data Screen or Graph Screen Function Key Bar, or press the F10 function key on the PC keyboard to display the sampled data using the currently selected non-SI display units.



SMU-00169

NOTE:
To use this function, the desired display units should be selected using the window that appears when the [Tool] menu [Option] command is executed.

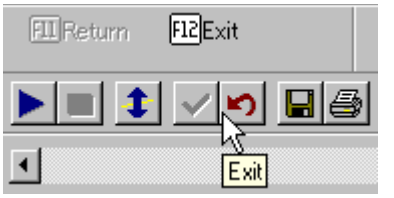
To return to SI unit display, click the F10 SI button on the Function Key Bar or press the F10 function key on the PC keyboard.



SMU-00171

Returning to the Fault Diagnosis Menu Screen

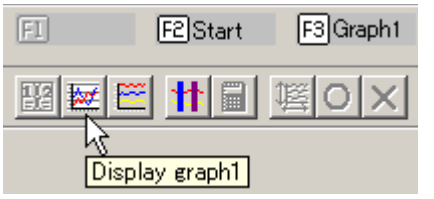
When there is no sampling operation being performed, click the icon on the Data List Toolbar or the F12 Exit button on the Function Key Bar.
You can also return to the previous screen by pressing the F12 function key on the PC keyboard.



SMU-00578

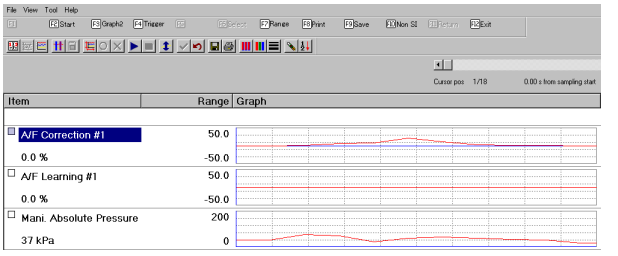
Graph 1 Screen

When there is no sampling operation being performed, click the icon on the Data List Toolbar or the F3 Graph1 button on the Function Key Bar to display the Graph 1 Screen.
Each press of the [F3] button on the Function Key Bar cycles in the following sequence: → [F3 Graph1] → [F3 Graph2] → [F3 Snapshot] →.
You can also display the Graph 1 Screen by pressing the F3 function key on the PC keyboard.



SMU-00579

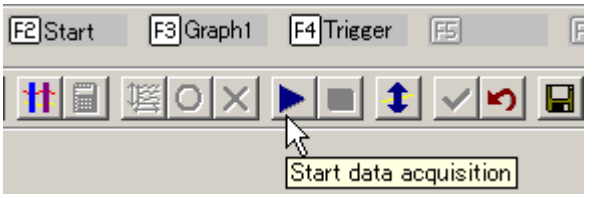
Graph 1 Screen



SMU-00580

Starting a Sampling Operation

Click the ▶ icon on the Data List Toolbar or the F2 Start button on the Function Key Bar to start sampling. You can also start sampling by pressing the F2 function key on the PC keyboard.



SMU-00581

Stopping a Sampling Operation

Click the ■ icon on the Data List Toolbar or the F2 Hold button on the Function Key Bar to stop sampling. You can also stop sampling by pressing the F2 function key on the PC keyboard.

SMU-00582

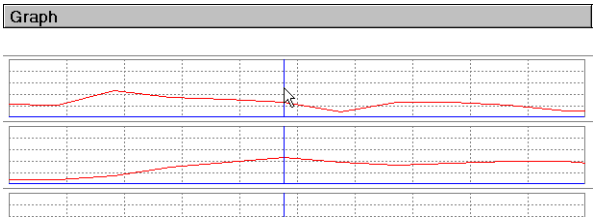
Moving the Graph Cursor

On the Graph Screen, move the mouse pointer to your desired position and click with the mouse. The graph cursor moves to that position. Dragging the graph cursor also moves the graph cursor to the desired position.

The graph cursor can also be moved by operating the left and right arrow keys on the PC. At this time, you can also move the cursor position 10 data items at a time by each press of either the left or right arrow key with the [Ctrl] key held down.

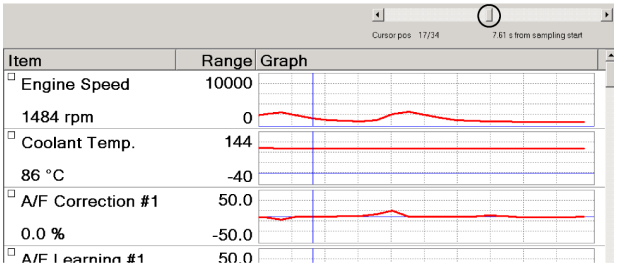
NOTE:

When operating the mouse cursor of the Graph Screen to move the graph cursor, cursor operations are only on the currently displayed screen. To scroll the screen in the horizontal direction, operate the Sampling Status Bar.



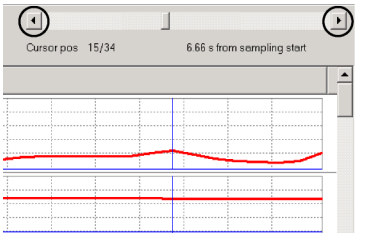
SMU-00693

Dragging the slider bar of the Sampling Status Bar left or right moves the graph cursor on the Graph Screen and scrolls the screen in the corresponding direction.



SMU-00185

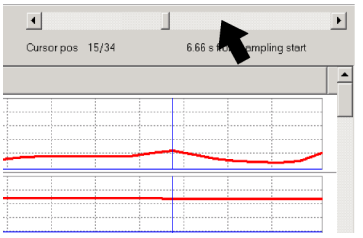
The graph cursor also can be moved by clicking the left or right arrow buttons at either end of the Sampling Status Bar.



SMU-00186

Sampling Status Bar Slider

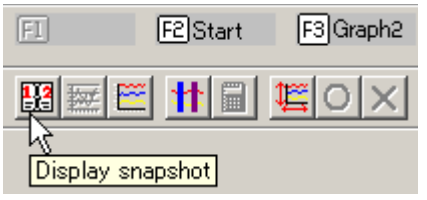
Clicking within the white spaces next to the slider bar automatically scrolls the graph screen horizontally until the slider reaches the point you clicked.



SMU-00221

Switching to the Digital Data Screen

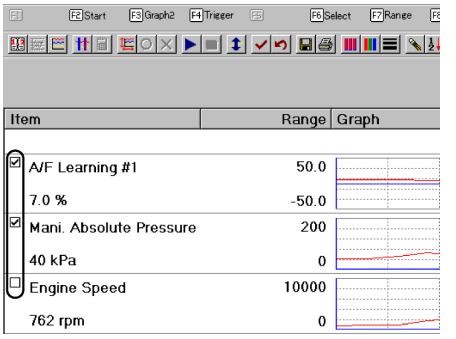
When there is no sampling operation being performed, click the icon on the Data List Toolbar or the F3 Graph2 button on the Function Key Bar twice to display the Digital Data Screen.
Each press of the [F3] button on the Function Key Bar cycles in the following sequence: → [F3 Graph1] → [F3 Graph2] → [F3 Snapshot] →.
You can also display the Graph Screen by pressing the F3 function key on the PC keyboard.



SMU-00583

Data Select Screen

Particular graphs can be selected for display as desired. When there is no sampling operation being performed, click the check box in front of the graph item you want. An item is selected when there is a check mark inside its check box.
You can also select (check) the checkbox of the highlighted item by pressing the space bar on the PC keyboard.
Next, click the icon on the Data List Toolbar or the F6 Select button on the Function Key Bar.
This will display the selected graphs only.
You can also display the selected graphs by pressing the F6 function key on the PC keyboard.



SMU-00584

NOTE:

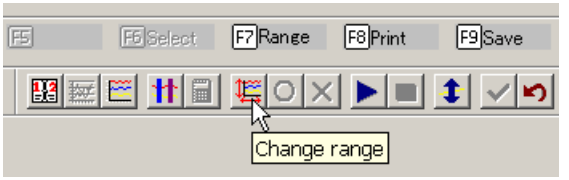
- Displaying selected data causes data sampled up to that point to be deleted.
- Sampling is faster when specific data items are selected. (This applies only to engine and transmission sampling.)
- If the message dialog box shown below appears while you are selecting data items, it means that the limit on the number of selectable data items has been reached. Selection of further data items is not possible after this message appears.
  To select other items, deselect the check boxes next to the currently selected (checked) items, and then select the new items.

SMU-00154

Changing the Range of the Graph Screen

The following procedure can be used to change the range settings of the graph screen vertical and horizontal axes in order to make graphs easier to read.

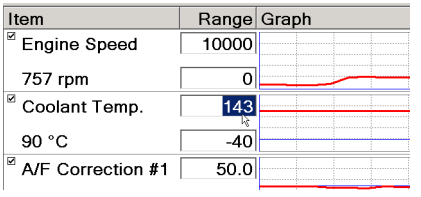
1. While sampling is stopped, click the icon on the Data List Toolbar or the F7 Range button on the Function Key Bar. You can also display the range setting screen by pressing the F7 function key on the PC keyboard.



SMU-00585

2. After the screen below appears, input a value to specify the vertical axis range of the graph into the range box.

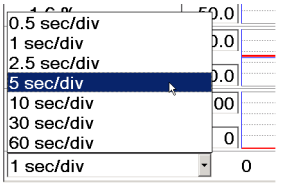
NOTE:
The range box may not appear for some items.



SMU-00195

3. To specify the graph horizontal (time) axis range, click the range selection box in the lower left corner of the screen, and then select the desired time setting.

NOTE:
The time settings that appear depend on sampling conditions.



SMU-00196

4. After the graph vertical axis and horizontal axis range settings are configured as desired, click the icon on the Data List Toolbar or the F11 OK button on the Function Key Bar to apply them. You can also apply the range settings by pressing the F11 function key on the PC keyboard.

SMU-00586

To cancel the range change operation, click the icon on the Data List Toolbar or the F12 Cancel button on the Function Key Bar. You can also cancel the range change operation by pressing the F12 function key on the PC keyboard.

NOTE:
If sampling is started while 30 sec/div or 60 sec/div is selected with the time axis range box, sampling results will be displayed at 10-second intervals. This is done to prevent lag of the screen refresh operation by the PC application.
Stopping the sampling operation displays the 30 sec/div or 60 sec/div time axis screen.

Changing the Graph Line Color

Graph line colors can be changed to make graphs easier to view. You can change the line color of a specific item or for all items.

To change the line color for a specific item, select the cell for the item, and then click the icon on the Data List Toolbar. On the setting dialog box that appears, select the desired line color and then click the [OK] button.

SMU-00096

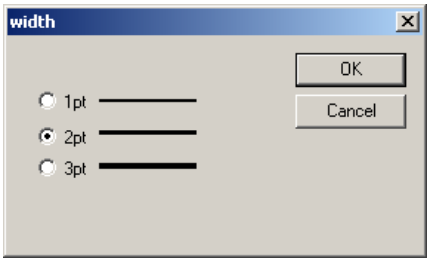
To change line color for all items, click the icon. On the setting dialog box that appears, click the desired graph line color and then click the [OK] button.

SMU-00096

Changing the Graph Line Thickness

One of three different thicknesses can be selected for the graph line.

When there is no sampling operation being performed, click the icon on the Data List Toolbar. On the setting dialog box that appears, click the desired graph line thickness and then click [OK].

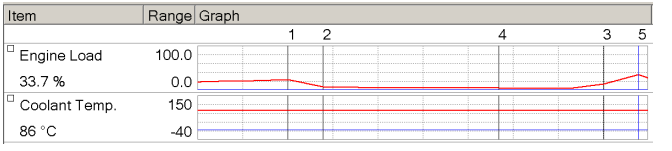


SMU-00203

NOTE:
If sampling is started while 2 pt or 3 pt is selected for the graph line thickness, sampling results will be displayed in a line thickness of 1 point (1 pt). This is done to prevent lag of the screen refresh operation by the PC application.
The graph line will change to selected thickness when sampling is stopped.

Marking Function

Marking a particular point on the graph is possible while sampling is processing or stopped.
Once marked data is stored, the markings will appear even when the stored data is shown again.
To do marking during sampling, press one of the number keys, alphabet keys or symbol keys on the PC at the time you want to mark a certain point.
To do marking while sampling is stopped or after a save, move the graph cursor and press one of the number keys, alphabet keys or symbol keys on the PC at the position you want to mark a certain point.
Marking numbers are automatically assigned in the order the key on the PC is pressed.



SMU-00461

NOTE:
- If the keys on the PC are pressed faster than the sampling speed, the marking may not be displayed in numerical order.
- Marking is not possible with some keys.

Marking Delete Function

You can delete markings.
There are two following methods to delete markings.

1) Deleting from marking edit screen

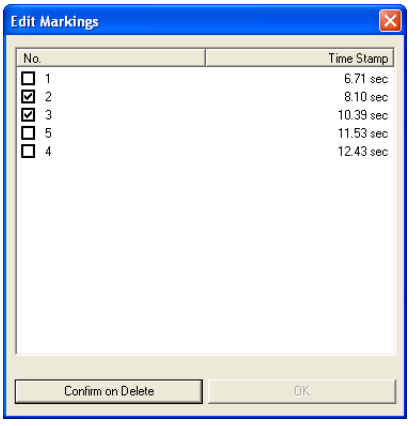
2) Deleting by PC keyboard

Deleting from Marking Edit Screen

1. Display a graph on the screen and select “Edit Markings” from “Tool” in menu.

SMU-00853

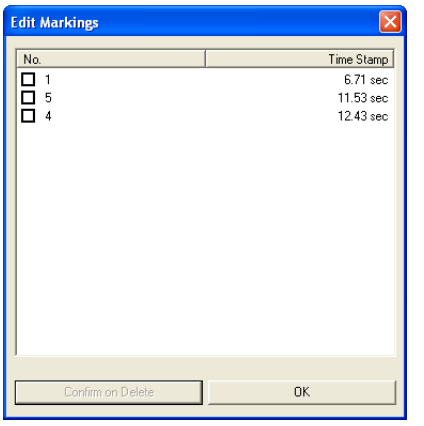
2. This displays an Edit Markings screen. Put a check mark in the marking number to be deleted and then click the [Confirm on Delete] button.



SMU-00854

NOTE:
- Clicking the [Confirm on Delete] causes markings on the edit screen to be deleted. However, markings on the graph are not deleted at this time.
- You can also select (check) the checkbox by pressing the space bar on the PC keyboard.

3. Click the [OK] button to close the edit screen. Markings on the graph screen will be deleted as soon as the edit screen is closed.



SMU-00855

Deleting by PC Keyboard

1. Display a graph on the screen and move a cursor to the marking to be deleted.
2. Press one of the number keys, alphabet keys or symbol keys on the PC.

NOTE:
Deleting marking is not possible with some keys.

Changing the Graph Sequence

The sequence that the graphs appear on the display can be changed as desired.
Select the graph you want to move. Next, while holding down both the Ctrl key and Shift key on the PC keyboard, press the up or down arrow key to move the selected graph upwards or downwards.

Initializing the Graph Sequence

The graphs’ sequence shown on the display can be initialized.
Clicking the icon on the Data List Toolbar makes the graphs go back to their initial positions.

Printing Sampled Data

When there is no sampling operation being performed, click the [File] menu and then select [Print]. You can also print by clicking the icon on the Data List Toolbar, by clicking the F8 Print button on the Function Key Bar, or by pressing the F8 function key on the PC keyboard.

Previewing the Print Image

When there is no sampling operation being performed, click the [File] menu and then select [Print Preview].

Setting Up the Printer

When there is no sampling operation being performed, click the [File] menu and then select [Setup printer].

Saving Sampled Data

When there is no sampling operation being performed, click the icon on the Data List Toolbar, or the F9 Save button on the Function Key Bar. You could also press the F9 function key on the PC keyboard.

Using Non-SI Units to Display Sampled Data

When there is no sampling operation being performed, click the F10 Non SI button on the Digital Data Screen or Graph Screen Function Key Bar, or press the F10 function key on the PC keyboard to display the sampled data using the currently selected non-SI display units.

NOTE:

- To use this function, the desired display units should be selected using the window that appears when the [Tool] menu [Option] command is executed.
- To return to SI unit display, click the F10 SI button on the Function Key Bar or press the F10 function key on the PC keyboard.

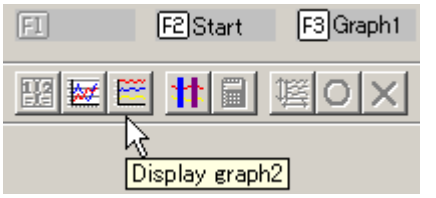
Returning to the Fault Diagnosis Menu Screen

When there is no sampling operation being performed, click the return icon on the Data List Toolbar or the F12 Exit button on the Function Key Bar.

You can also return to the previous screen by pressing the F12 function key on the PC keyboard.

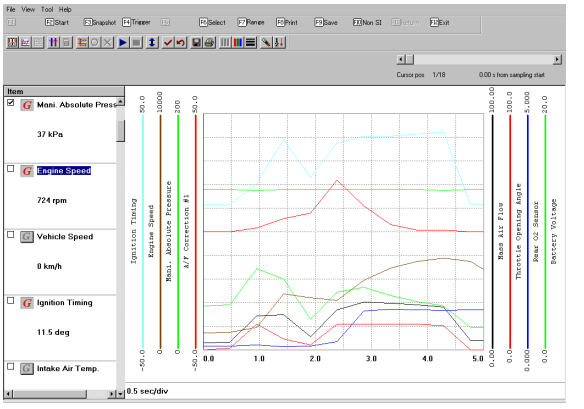
Graph 2 Screen (Single-screen 8-channel Graph)

If a sampling operation is being performed, stop it. On the Digital Data Screen, click the icon on the Data List Toolbar or click the F3 Graph1 button on the Function Key Bar twice to display Graph 2 Screen. Each press of the [F3] button on the Function Key Bar cycles in the following sequence: → [F3 Graph1] → [F3 Graph2] → [F3 Snapshot] →.
You can also display the Graph 2 Screen by pressing the F3 function key on the PC keyboard twice.



SMU-00587

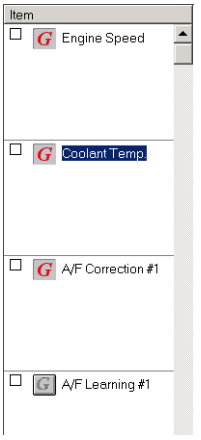
Graph 2 Screen



SMU-00588

Clicking the [G] button in front of an item causes the [G] button color to change to red, and displays the name of the item to be displayed for the vertical axis in the graph area.

To cancel an item selection, click its [G] button again.



SMU-00214

NOTE:

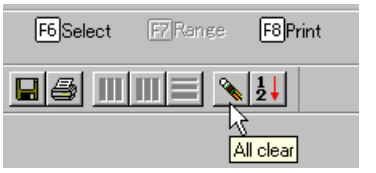
- You can display data for up to eight items on a single screen.
- The location of item axes depends on the sequence the items are selected. The first four items that are selected are displayed to the left of the graph, while the fifth through eighth items selected are displayed to the right.
- You can use the same procedures as those for Graph 1 Screen, to start and stop sampling, to move the graph cursor, to display data select, to change the range, to change the graph line color and thickness, marking function, etc.

Setting All Clear Function

All of the following settings can be returned to their initial status:

- Item sequence: default setting on each models
- Data Select Screen: all items not selected
- Horizontal axis range of Graph Screen: default setting on each item
- Vertical axis range of Graph Screen: 0.5 sec/div
- Graph line color of Graph Screen: all red
- Graph line thickness of Graph Screen: 1 point
- Trigger function: without trigger
- Two Cursor Analysis: end of Two Cursor Analysis

While sampling is stopped, click the icon on the Data List Toolbar.



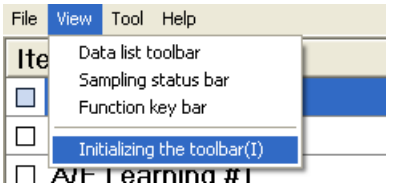
SMU-00694

Functions for Initializing Toolbars

It is possible to initialize the display on each toolbar. If you initialize the toolbars, the display will be shown as follows:

- Display or not: Displays all toolbars.
- Position of display: Initial display position.

For initializing the toolbars, select “Initializing the toolbar” from “View” on the menu.



SMU-00867

Sampling Item Memory

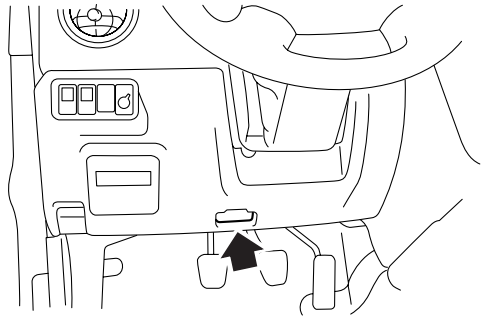
Sampling item memory can be used to configure required sampling items for each abnormality symptom. Then setting files can be read as required for sampling.

NOTE:
- The setting files described above are called “mode files”.
- This function may not be available in the case of certain vehicle models and vehicle specifications.

Creating a Mode File

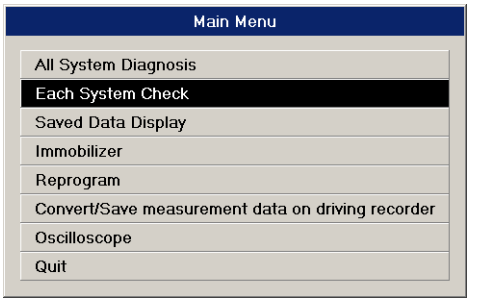
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle’s ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



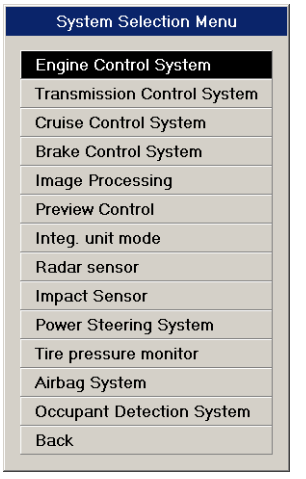
SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle’s ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



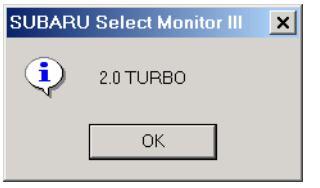
SMU-00600

7. On the System Selection Menu, select [Engine Control System] and then press the Enter key or left click with the mouse.



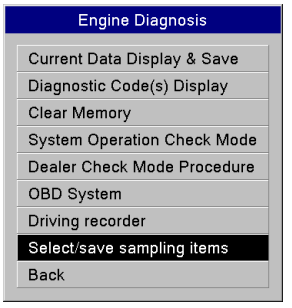
SMU-00665

8. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.



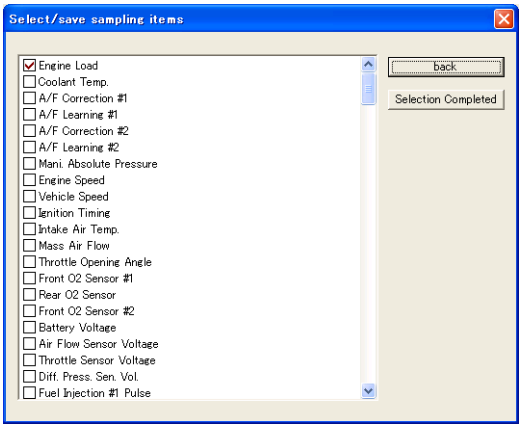
SMU-00128

9. From the list of fault diagnosis items, select [Select/save sampling items] and then press the Enter key or left-click with the mouse.



SMU-00499

10. This displays a sampling item selection screen. Select the required sampling item and then click, [Selection Completed].

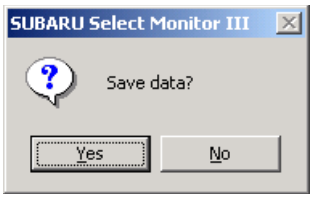


SMU-00500

NOTE:
If the message dialog box shown below appears while you are selecting data items, it means that the limit on the number of selectable data items has been reached. Selection of further data items is not possible after this message appears. To select other items, deselect the check boxes next to the currently selected (checked) items, and then select the new items.

SMU-00154

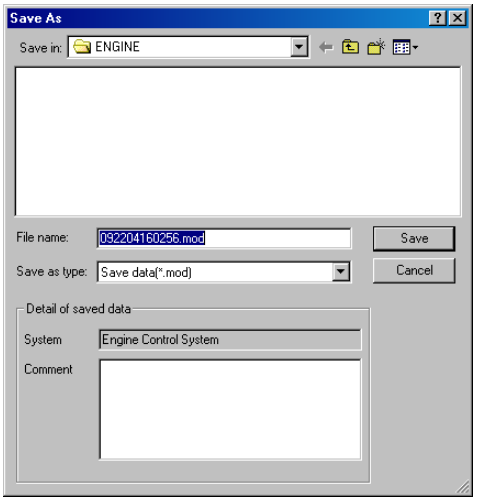
11. This displays a save confirmation dialog box. Click the [Yes] button.



SMU-00501

12. This causes save dialog box of the mode files to appear.

The name of the data file being saved is generated automatically in accordance with the current time and date. If you want to use the generated file name as-is, click the dialog box [Save] button. If you want to change to a different file name, type in the name you want.



SMU-00502

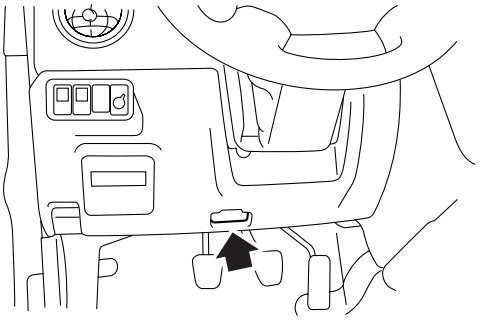
NOTE:
- Mode files are saved in one of the folders shown below, which ate located in the directory where the PC application was installed.
  Data folder → Engine or Transmission folder.
  To change to another storage location, specify the location you want in the Save in box of the Save As dialog box.
- The Comment box of the Save As dialog box can be used to save general comments associated with the data or file.

Reading a Mode File for Sampling

NOTE:
This function may not be available in the case of certain vehicle models and vehicle specifications.

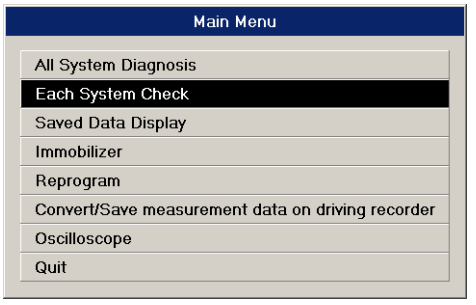
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



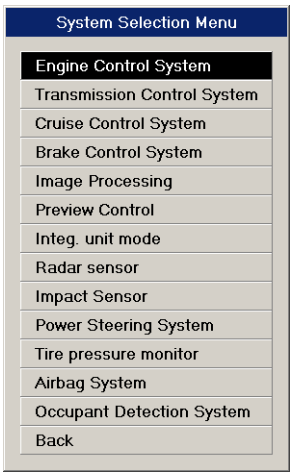
SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle's ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



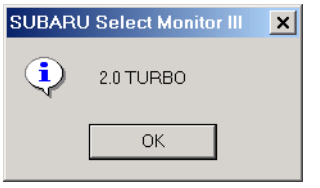
SMU-00600

7. On the System Selection Menu, select [Engine Control System] and then press the Enter key or left click with the mouse.



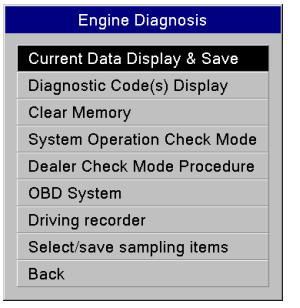
SMU-00665

8. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.



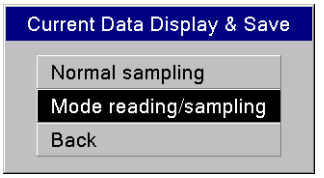
SMU-00128

9. From the list of fault diagnosis items, select [Current Data Display & Save] and then press the Enter key or left-click with the mouse.



SMU-00503

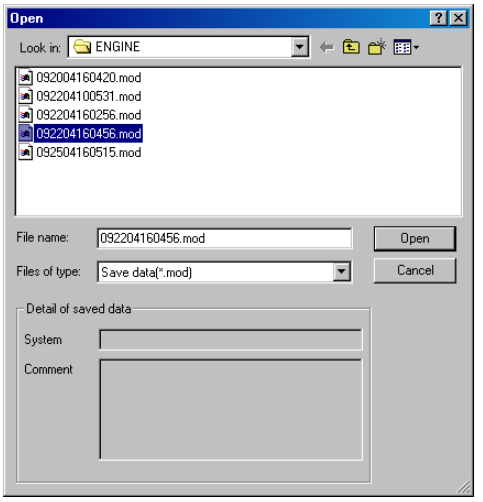
*10.*This displays the dialog box shown below. Select {Mode reading/sampling} and then press the Enter key or left-click with the mouse.



SMU-00504

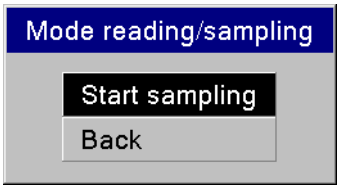
*11.*This displays a dialog box with a list of saved files.

Select the desired file and then press the Enter key or click [Open].



SMU-00505

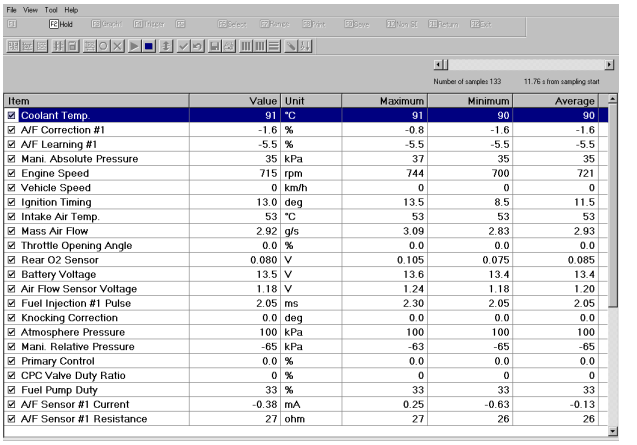
*12.*This displays a sampling start confirmation screen. Click the [Start sampling] button.



SMU-00506

*13.*This displays the digital data screen.

You can start and stop sampling and perform other operations using the same procedures as those described under “Current Data Display and Save”. For details about these operations, see “Current Data Display and Save”.



Item	Value	Unit	Maximum	Minimum	Average
Coolant Temp.	91	°C	91	90	90
A/F Correction #1	-1.6	%	-0.8	-1.6	-1.6
A/F Learning #1	-5.5	%	-5.5	-5.5	-5.5
Mani. Absolute Pressure	35	kPa	37	35	35
Engine Speed	715	rpm	744	700	721
Vehicle Speed	0	km/h	0	0	0
Ignition Timing	13.0	deg	13.5	8.5	11.5
Intake Air Temp.	53	°C	53	53	53
Mass Air Flow	2.92	g/s	3.09	2.83	2.93
Throttle Opening Angle	0.0	%	0.0	0.0	0.0
Rear O2 Sensor	0.080	V	0.105	0.075	0.085
Battery Voltage	13.5	V	13.6	13.4	13.4
Air Flow Sensor Voltage	1.18	V	1.24	1.18	1.20
Fuel Injection #1 Pulse	2.05	ms	2.30	2.05	2.05
Knocking Correction	0.0	deg	0.0	0.0	0.0
Atmosphere Pressure	100	kPa	100	100	100
Mani. Relative Pressure	-65	kPa	-63	-65	-65
Primary Control	0.0	%	0.0	0.0	0.0
CPC Valve Duty Ratio	0	%	0	0	0
Fuel Pump Duty	33	%	33	33	33
A/F Sensor #1 Current	-0.38	mA	0.25	-0.63	-0.13
A/F Sensor #1 Resistance	27	ohm	27	26	26

SMU-00589

NOTE:
To display all data after reading a mode file, click the icon on the Data List Toolbar or the F11 Return button on the Function Key Bar. You can also display to the all data screen by pressing the F11 function key on the PC keyboard.

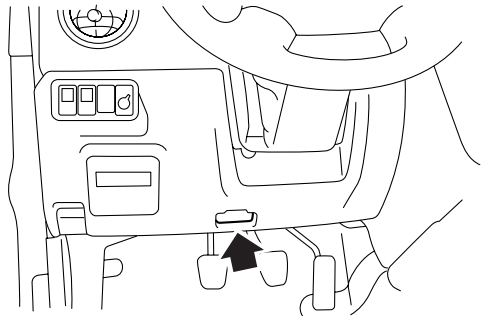
Trigger

The trigger feature lets you configure a trigger to be applied while sampling is in progress. There are two types of triggers that can be configured: an “Trigger of input data” that automatically detects the trigger in accordance with pre-set parameters, and a “Manual trigger” that is triggered manually. When sampling is performed using a trigger, data is stored from the start of the sampling until the specified time from trigger detection elapses.

Getting Ready

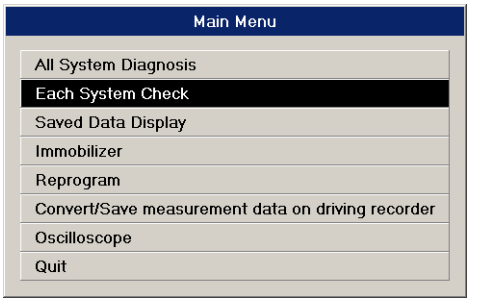
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle’s ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



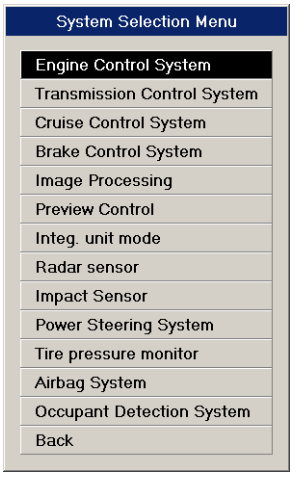
SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle’s ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



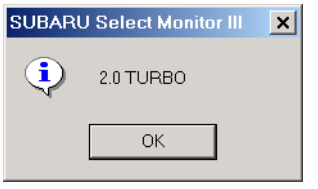
SMU-00600

7. On the System Selection Menu, select the desired system and then press the Enter key or left-click with the mouse. (As an example, “Engine” is selected.)



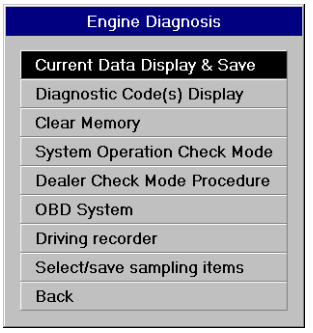
SMU-00665

8. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.



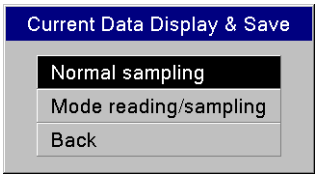
SMU-00128

9. From the list of fault diagnosis items, select [Current Data Display & Save] and then press the Enter key or left-click with the mouse.



SMU-00601

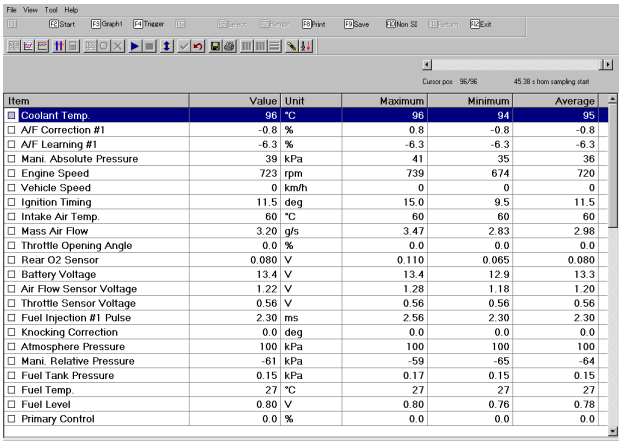
10. This displays the dialog box shown below. Select [Normal sampling] and then press the Enter key or left-click with the mouse. (As an example, “Normal sampling” is selected.)



SMU-00508

11. This displays the Digital Data Screen, so sampling is stopped.

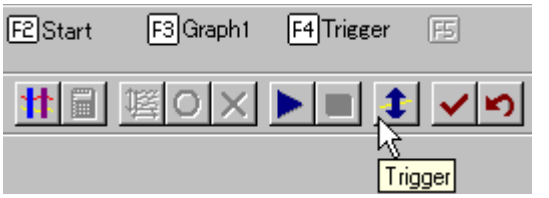
The trigger function can be used while the Digital Data Screen, Graph 1 Screen, or Graph 2 Screen is displayed.



Item	Value	Unit	Maximum	Minimum	Average
Coolant Temp.	96	°C	96	94	95
A/F Correction #1	-0.8	%	0.8	-0.8	-0.8
A/F Learning #1	-6.3	%	-6.3	-6.3	-6.3
Mani. Absolute Pressure	39	kPa	41	35	36
Engine Speed	723	rpm	739	674	720
Vehicle Speed	0	km/h	0	0	0
Ignition Timing	11.5	deg	15.0	9.5	11.5
Intake Air Temp.	60	°C	60	60	60
Mass Air Flow	3.20	g/s	3.47	2.83	2.98
Throttle Opening Angle	0.0	%	0.0	0.0	0.0
Rear O2 Sensor	0.080	V	0.110	0.065	0.080
Battery Voltage	13.4	V	13.4	12.9	13.3
Air Flow Sensor Voltage	1.22	V	1.28	1.18	1.20
Throttle Sensor Voltage	0.56	V	0.56	0.56	0.56
Fuel Injection #1 Pulse	2.30	ms	2.56	2.30	2.30
Knocking Correction	0.0	deg	0.0	0.0	0.0
Atmosphere Pressure	100	kPa	100	100	100
Mani. Relative Pressure	-61	kPa	-59	-65	-64
Fuel Tank Pressure	0.15	kPa	0.17	0.15	0.15
Fuel Temp.	27	°C	27	27	27
Fuel Level	0.80	V	0.80	0.76	0.78
Primary Control	0.0	%	0.0	0.0	0.0

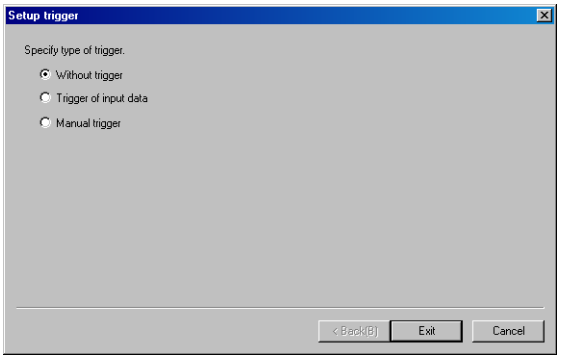
SMU-00646

12. Click the icon on the Data List Toolbar, or the F4 Trigger button on the Function Key bar. You could also press the F4 function key on the PC keyboard.



SMU-00649

13. This displays the setup trigger screen.



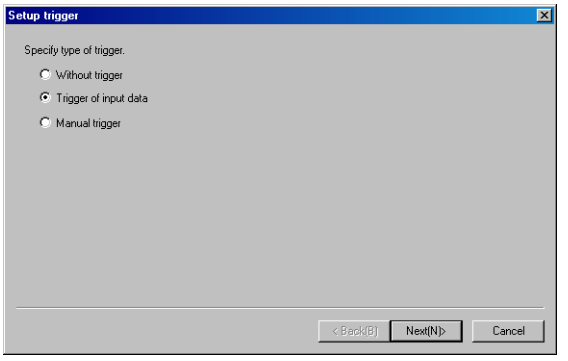
SMU-00650

1) Without trigger
Triggering is not performed. Select this option when you want to cancel the trigger function.
2) Trigger of input data
This setting is used to configure trigger settings for each sampling item for automatic trigger detection.
3) Manual trigger
With Manual trigger, triggering is performed manually by pressing the trigger switch during data sampling.

Configuring Trigger of input data Settings

Configuring triggers to necessary items in advance automatically detects triggers.

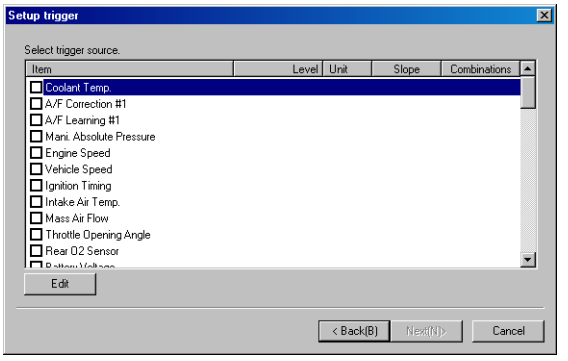
1. On the Specify type of trigger screen, select “Trigger of input data” and then click the [Next] button.



SMU-00651

2. Specify the trigger source.

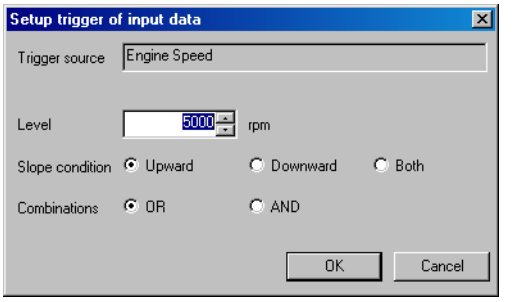
   In the list, select the checkbox next to the item whose setting you want to change, or double-click the item.



SMU-00652

3. This displays the Setup trigger of input data screen. Configure the settings and then click the [OK] button.

When a sampling item is not switch input



SMU-00653

1) Level

This specifies the trigger level, the value that detects triggers. You can input a value directly into the box or you can use its up and down arrows to change the setting. The setting value is limited to values that can actually be obtained. If you type in a value that cannot be obtained, the software will automatically change it to the nearest allowable value.

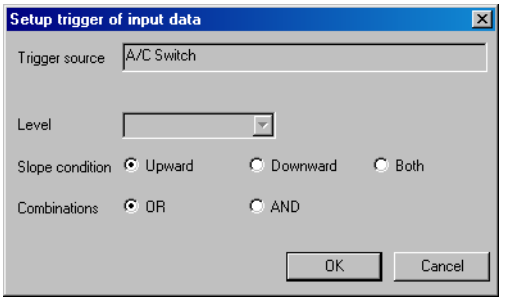
2) Slope condition

This setting specifies the condition for trigger detection when the sample data values reach the trigger level. When [Both] is selected, a trigger is detected when either a Upward or Downward condition is first satisfied.

3) Combinations

When there are multiple triggers, these settings can be used to configure combinations.

When a sampling item is switch input



SMU-00654

1) Level

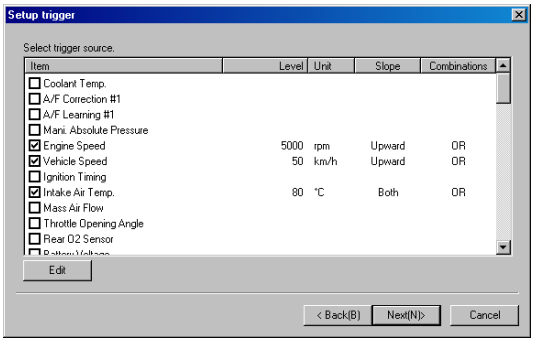
This specifies the trigger level, the value that detects triggers. The setting is configured by button operation. This setting cannot be selected for certain sampling items.

2) Slope condition
This setting specifies the data condition for trigger detection when the sample data values reach the trigger level.
Selecting [Upward] detects a trigger at the OFF → ON point.
Selecting [Downward] detects a trigger at the ON → OFF point.
Selecting [Both] detects a trigger at either the OFF → ON point or the ON → OFF point, whichever occurs first.
3) Combinations
When there are multiple triggers, these settings can be used to configure Combinations.

4. Checkboxes of the channels to which you set triggers are checked.

If you want to configure multiple triggers, repeat steps 2 and 3.

After configuring all of the triggers you want, click the [Next] button.



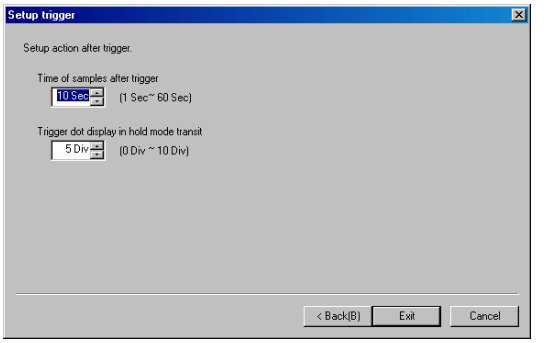
SMU-00655

NOTE:
- To change a trigger setting, select the desired item and then click the [Edit] button to display the Setup trigger of input data screen.
- To exclude the setting of an item that is currently configured for a trigger, clear the check box of the applicable item.
- If the message dialog box shown below appears while you are configuring an item setting, it means that the limit on the number of selectable items has been reached. Selection of further data items is not possible after this message appears. To select other items, deselect the check boxes next to the currently selected (checked) items you no longer need, and then select another item to which you want to assign a trigger.

SMU-00154

5. Setup the action that should be performed after a trigger is detected.

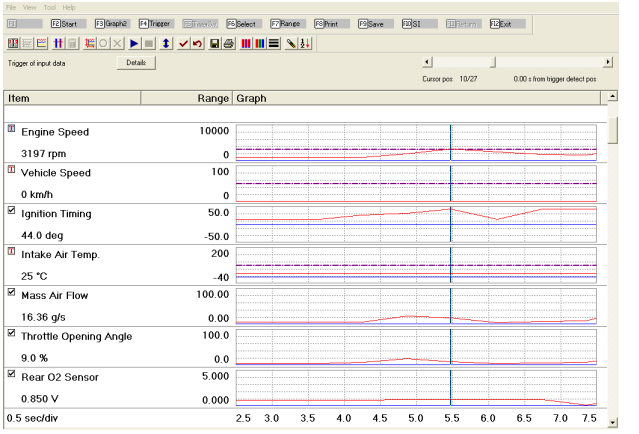
Configure the settings and then click the [Exit] button.



SMU-00656

1) Time of samples after trigger
This setting is the sampling time after the trigger is detected.
2) Trigger dot display in hold mode transit
This setting specifies the display position of the trigger detection point (trigger point) when the graph is displayed following sampling.

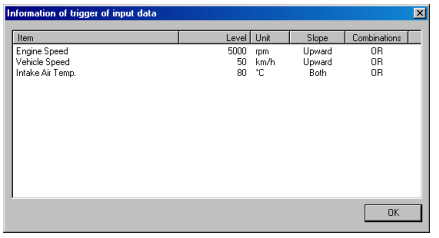
6. This will display the measurement screen and automatically start sampling. If the trigger is detected during sampling, data is collected for the specified time and then sampling stops automatically.



SMU-00770

NOTE:

- Assigning an input trigger to an item causes “T” to appear in item’s checkbox.
- Manual trigger can still be used even if input trigger sampling is in progress. In this case, the sampling time after trigger detection is the same time set for the Trigger of input data.
- Clicking the icon on the Data List Toolbar during sampling will terminate sampling immediately, regardless of whether or not there is a trigger. This is also true if the Function Key Bar F2 Hold button is clicked or the F2 function key on the PC keyboard is pressed.
- On the graph, the trigger level is indicated as a purple chain lines, while the trigger points are indicated by vertical green chain lines.
- Trigger information is displayed on the left side of the Sampling Status Bar. Clicking the [Details] button displays an Information of trigger of input data screen, which you can use to view detailed information about the currently assigned trigger.

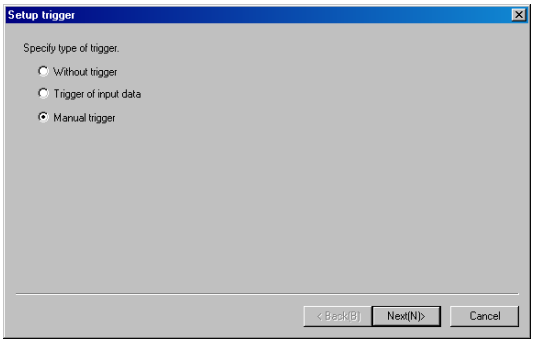


SMU-00658

Configuring a Manual Trigger

With a Manual trigger, trigger detection is not performed automatically and a trigger is applied whenever the trigger switch is pressed.

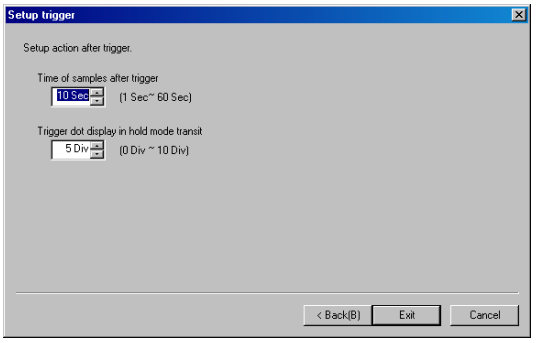
1. On the Specify type of trigger screen, select “Manual trigger” and then click the [Next] button.



SMU-00659

2. Setup the action that should be performed after a trigger is detected.

   Configure the settings and then click the [Exit] button.

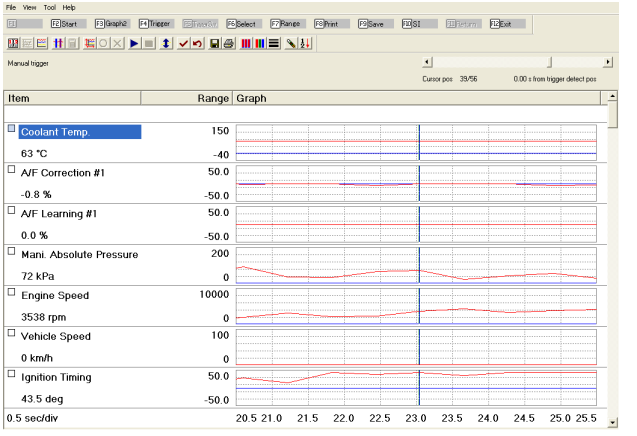


SMU-00656

1) Time of samples after trigger
This setting is the sampling time after the trigger switch is pressed.
2) Trigger dot display in hold mode transit
This setting specifies the display position of the trigger switch press point (trigger point) when the graph is displayed following sampling.

3. This will display the measurement screen and automatically start sampling.

   When sampling reaches the point where you want to apply the trigger, click the F5 TriggerSw button on the Function Key Bar or the F5 function key on your PC keyboard. After you do, data is collected for the specified time and then sampling stops automatically.



SMU-00771

NOTE:

- Clicking the icon on the Data List Toolbar during sampling will terminate sampling immediately, regardless of whether or not there is a trigger. This is also true if the Function Key Bar

button is clicked or the F2 function key on the PC keyboard is pressed.
- On the graph, trigger points are shown as vertical green chain lines.
- Trigger information is displayed on the left side of the Sampling Status Bar.

Two Cursor Analysis

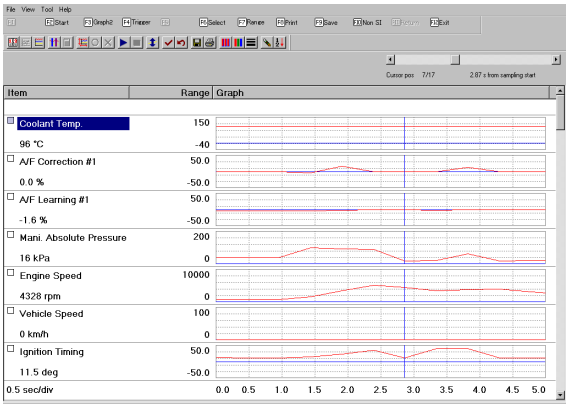
Two Cursor Analysis is provided with two functions: display cursor numerical value information between two points, and cut-and-save data.
As cursor numerical value information between two points, the numerical values of any two points in the sampled data, and the maximum value, minimum value and average value between two points can be calculated and displayed.
For cut-and-save of data, the between any two points in the sample data can be cut and save.

Cursor Numerical Value Information between Two Points

Cursor numerical value information between two points can be used in the digital data screen, and either of the Graph 1 Screen or Graph 2 Screen. Note, however, that on the Graph 1 Screen or Graph 2 Screen, only selected sampling items are displayed, and on the digital data screen, all sampling items are displayed.
Cursor numerical value information between two points can also be used when saved data is re-displayed.

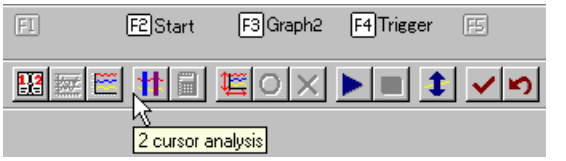
Displaying Numerical Value Information on a Graph Screen

1. Display the Graph Screen. (The following explanation is for the Graph 1 Screen.)



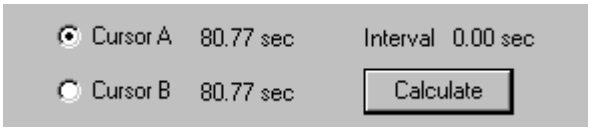
SMU-00705

2. Click the icon on the Data List Toolbar.



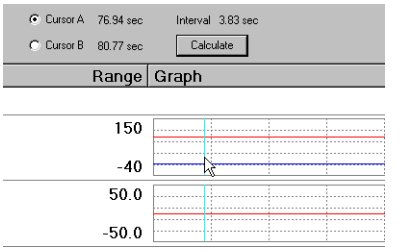
SMU-00707

3. The cursor selection buttons, cursor position times, cursor interval and [Calculate] button are displayed on the Sampling Status Bar.



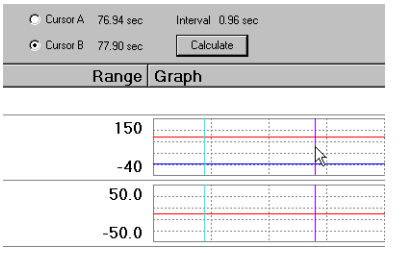
SMU-00708

4. The cursor selection button “Cursor A” is selected. Move graph Cursor A (light blue) to the desired position.



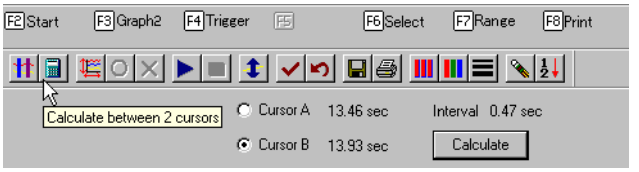
SMU-00709

5. Select “Cursor B” by the cursor selection button. Move graph Cursor B (purple) to the desired position.



SMU-00710

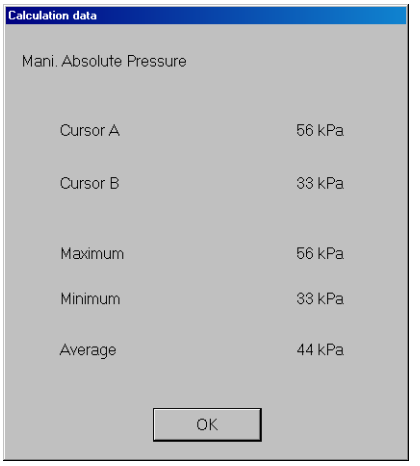
6. After selecting the sampling item, click the icon on the Data List Toolbar or the [Calculate] button on the Sampling Status Bar.



SMU-00712

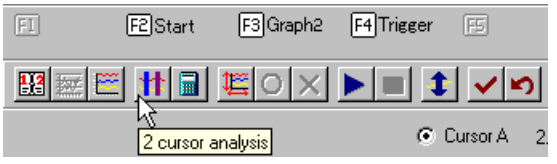
7. This displays the numerical value information screen.

   To close this screen, click the [OK] button.



SMU-00713

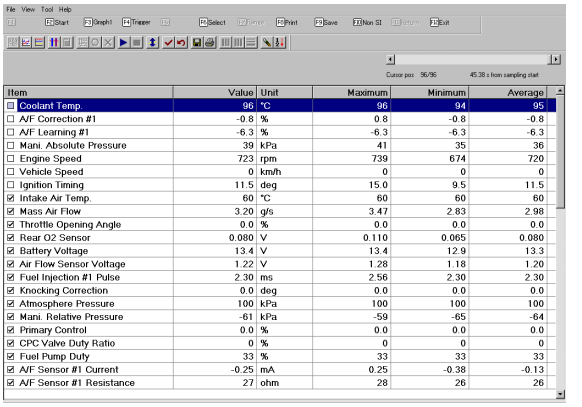
8. To exit the Two Cursor Analysis function, click the icon again.



SMU-00714

Displaying Numerical Value Information on the Digital Data Screen

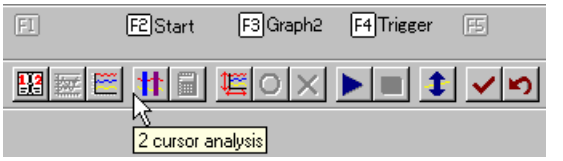
1. Display the digital data screen.



Item	Value	Unit	Maximum	Minimum	Average
Coolant Temp.	96	°C	96	94	95
A/F Correction #1	-0.8	%	0.8	-0.8	-0.8
A/F Learning #1	-6.3	%	-6.3	-6.3	-6.3
Mani. Absolute Pressure	39	kPa	41	35	36
Engine Speed	723	rpm	739	674	720
Vehicle Speed	0	km/h	0	0	0
Ignition Timing	11.5	deg	15.0	9.5	11.5
Intake Air Temp.	60	°C	60	60	60
Mass Air Flow	3.20	g/s	3.47	2.83	2.98
Throttle Opening Angle	0.0	%	0.0	0.0	0.0
Rear O2 Sensor	0.080	V	0.110	0.065	0.080
Battery Voltage	13.4	V	13.4	12.9	13.3
Air Flow Sensor Voltage	1.22	V	1.28	1.18	1.20
Fuel Injection #1 Pulse	2.30	ms	2.56	2.30	2.30
Knocking Correction	0.0	deg	0.0	0.0	0.0
Atmosphere Pressure	100	kPa	100	100	100
Mani. Relative Pressure	-61	kPa	-59	-65	-64
Primary Control	0.0	%	0.0	0.0	0.0
CPC Valve Duty Ratio	0	%	0	0	0
Fuel Pump Duty	33	%	33	33	33
A/F Sensor #1 Current	-0.25	mA	0.25	-0.38	-0.13
A/F Sensor #1 Resistance	27	ohm	28	26	26

SMU-00715

2. Click the icon on the Data List Toolbar.

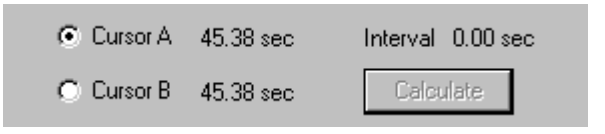


SMU-00707

NOTE:

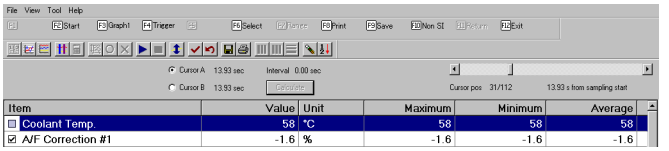
- When displaying the cursor information between two points, the data value of the currently selected cursor position is displayed as the display value in the value field.
- When displaying the cursor information between two points, the values between cursors A and B and not the value from the sampling start point are displayed as the display value for the maximum, minimum and average values.

3. The cursor selection buttons, cursor position times and cursor interval are displayed on the Sampling Status Bar.



SMU-00716

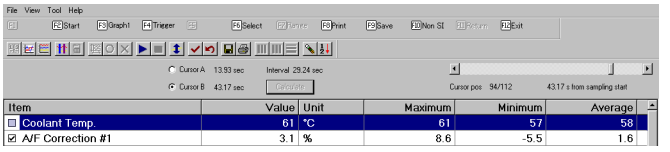
4. The cursor selection button “Cursor A” is selected. Move Cursor A to the desired position with “Cursor A” selected as it is.



SMU-00717

NOTE:
In the digital data screen, the cursor is not displayed. So, check the cursor position by the cursor position time to the side of the cursor selection button.

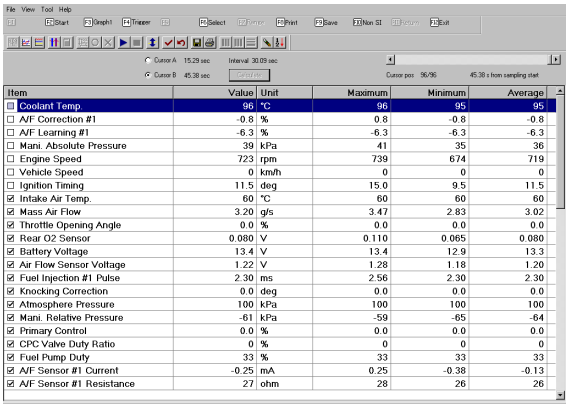
5. Select “Cursor B” by the cursor selection button, and move Cursor B to the desired position.



SMU-00718

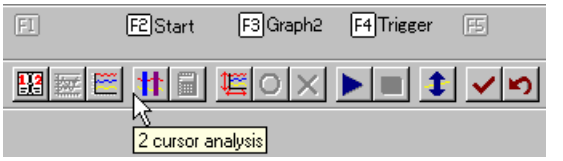
6. Check the numerical value information between the two cursors.

   In the digital data screen, the numerical value information of all sampling items is calculated to linear information and displayed when you move the cursor position.



SMU-00719

7. To exit the Two Cursor Analysis function, click the icon again.

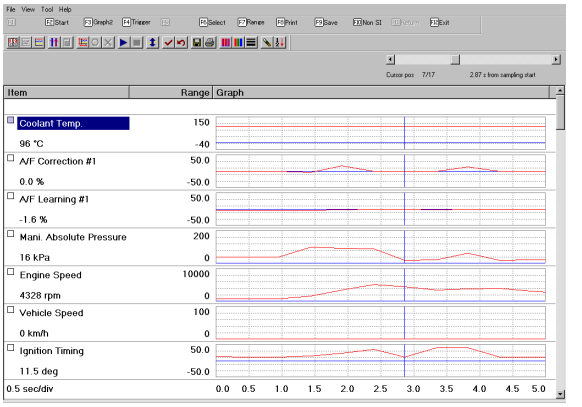


SMU-00707

Data Cut-and-Save

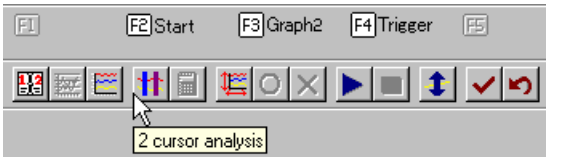
Data cut-and-save can be used in the digital data screen, and either of the Graph 1 Screen or Graph 2 Screen.

1. Display the sampling screen. (The following explanation is for the Graph 1 Screen.)



SMU-00705

2. Click the icon on the Data List Toolbar.

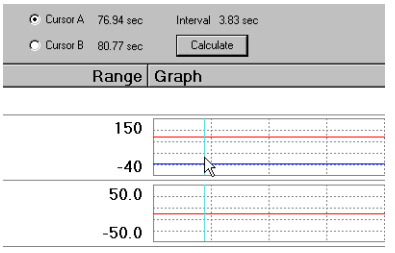


SMU-00707

3. The cursor selection buttons, cursor position times, cursor interval and [Calculate] button are displayed on the Sampling Status Bar.

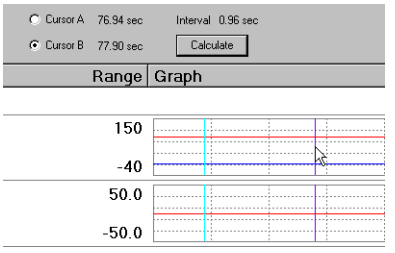
SMU-00708

4. The cursor selection button “Cursor A” is selected. Move graph Cursor A (light blue) to the desired position.



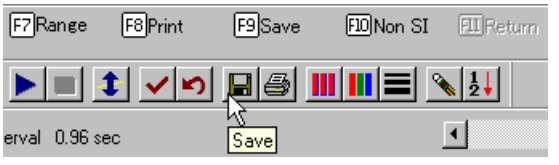
SMU-00709

5. Select “Cursor B” by the cursor selection button. Move graph Cursor B (purple) to the desired position.



SMU-00710

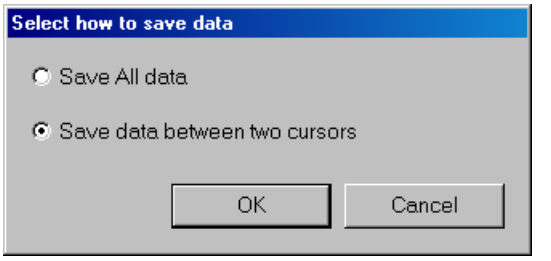
6. Click the icon on the Data List Toolbar or the F9 Save button on the Function Key Bar. You could also press the F9 function key on the PC keyboard.



SMU-00720

7. This displays the Select how to save data screen.

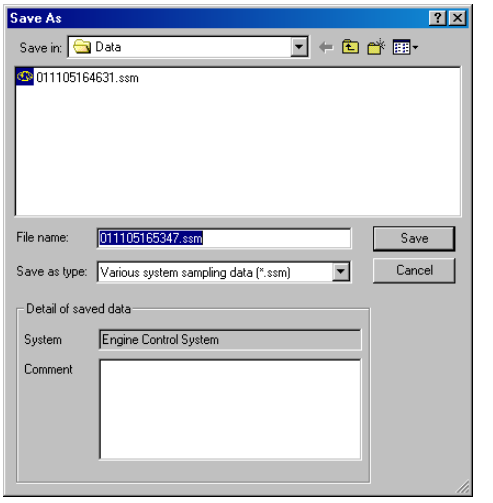
Select “Save data between two cursors” and click the [OK] button.



SMU-00721

NOTE:
If you select “Save All data” at this time, cut-and-save will not be performed, and all sampled data will be saved.

8. This causes the sampled data save dialog box to appear. The name of the data file being saved is generated automatically in accordance with the current time and date. If you want to use the generated file name as-is, click the dialog box [Save] button. If you want to change to a different file name, type in the name you want.



SMU-00722

NOTE:

- Sample data files are saved in the Data folder where the PC application is installed. To change to another storage location, specify the location you want in the Save in box of the save data dialog box.
- The Comment box of the Save As dialog box can be used to save general comments associated with the data or file.
- When performing cut-and-save on selected data in a file containing all data, the save file name cannot be set to the same name as the save file containing all data before the cut is performed, and cannot be saved.

Converting Sampled Data to CSV

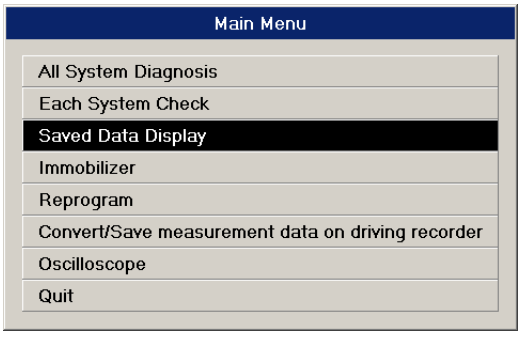
Converting sampled data to CSV format allows to analyze the data on a PC without SSMIII installed. Converting sampled data to CSV should be performed on the saved data analysis screen.

NOTE:
Up to 50,000 sampled data can be saved as CSV file. For more than 50,000 sampled data, data cut-and-save can be used to reduce the number of data before converting to CSV.

How to Convert to CSV from Menu

1. Double-click the SSMIII icon on the PC screen to start up the application.

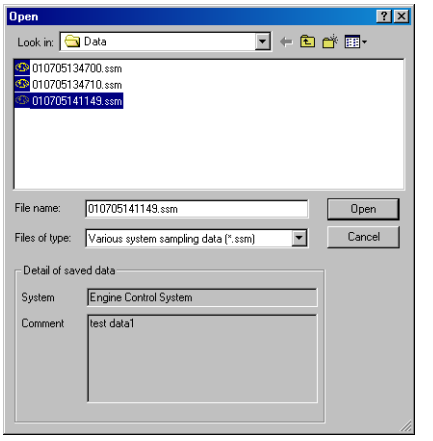
   On the Main Menu that appears on the display, select [Saved Data Display] and then press the Enter key or left-click with the mouse.



SMU-00602

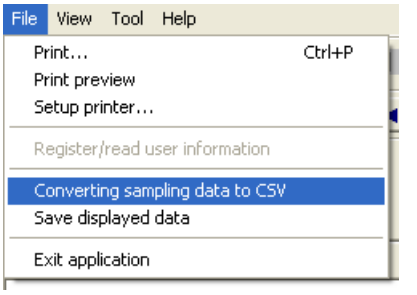
2. The dialog box with a list of saved data files is displayed.

   After selecting “Files of type”, designate the file you need, and press the Enter key or click the [Open] button.



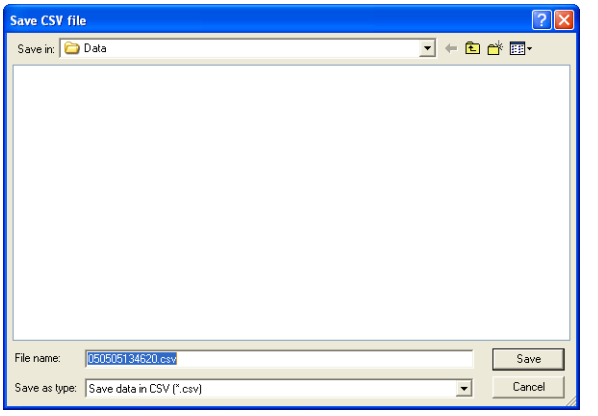
SMU-00697

3. This displays saved data. Select “Converting sampling data to CSV” from “File” in menu.



SMU-00824

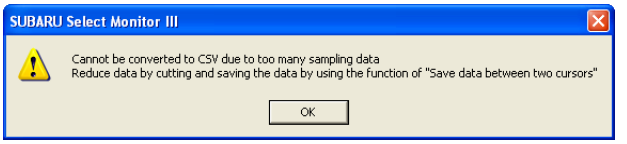
4. This causes the Save CSV file dialog to appear. Enter the desired file name, and click the [Save] button.



SMU-00825

NOTE:
- The file name in dafault setting will be the same name as saved data which is opened.

- CSV files are saved in the Data folder where the PC application is installed. To change to another storage location, specify the location you want in the Save in box of the save data dialog box.
- If the dialog shown below appears after clicking the [Save] button, reduce the number of data to be saved. In this case, convert to CSV in accordance with the procedure in “In the Case of Too Many Sampled Data”



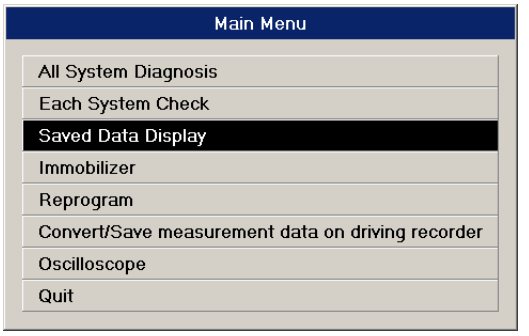
SMU-00826

How to Convert to CSV with Save Icon or Save Button

NOTE:
Converting to CSV with icon or F9 Save button is effective only when making changes such as added marking etc.

1. Double-click the SSMIII icon on the PC screen to start up the application.

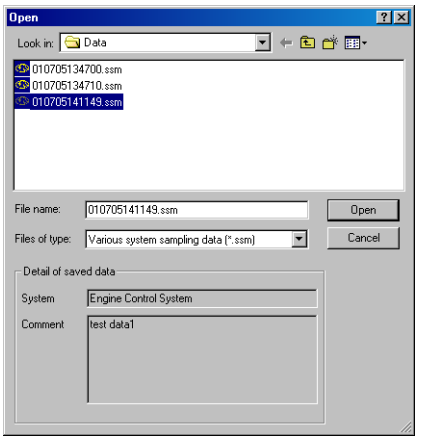
   On the Main Menu that appears on the display, select [Saved Data Display] and then press the Enter key or left-click with the mouse.



SMU-00602

2. The dialog box with a list of saved data files is displayed.

   After selecting “Files of type”, designate the file you need, and press the Enter key or click the [Open] button.

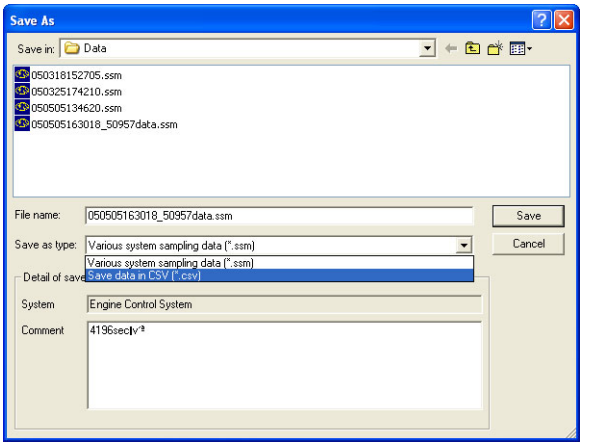


SMU-00697

3. Click the icon on the Data List Toolbar, or the F9 Save button on the Function Key bar. You could also press the F9 function key on the PC keyboard.

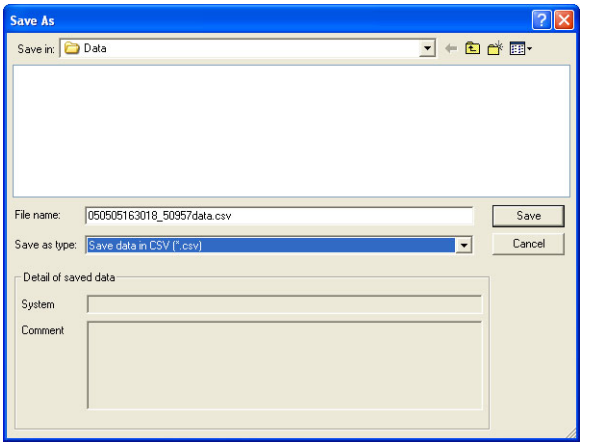
SMU-00577

4. This displays a save dialog. Select “Save data in CSV (*.csv)” in “Save as type”.



SMU-00827

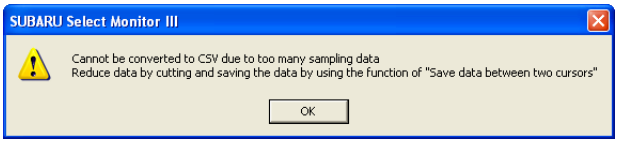
5. Enter the desired file name, and click the [Save] button.



SMU-00828

NOTE:

- The file name in dafault setting will be the same name as saved data which is opened.
- CSV files are saved in the Data folder where the PC application is installed. To change to another storage location, specify the location you want in the Save in box of the save data dialog box.
- If the dialog shown below appears after clicking the [Save] button, reduce the number of data to be saved. In this case, convert to CSV in accordance with the procedure in “In the Case of Too Many Sampled Data”



SMU-00826

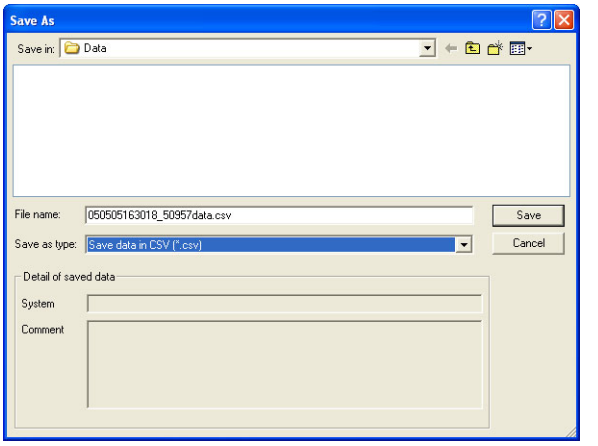
In the Case of Too Many Sampled Data

Up to 50,000 data can be converted to CSV. In the case of more than this, use cut-and-save and convert data to CSV in accordance with the following procedure.

NOTE:

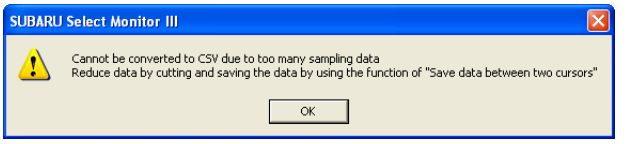
This describes how to convert to CSV with Save icon or Save button. However, you can also convert data to CSV by selecting “Converting sampling data to CSV” from “File” in menu.

1. Display a CSV file save dialog in accordance with the procedure described before, and click the [Save] button.



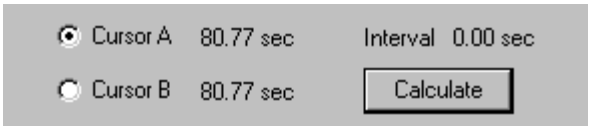
SMU-00828

2. This displays a dialog box below. Click the [OK] button.



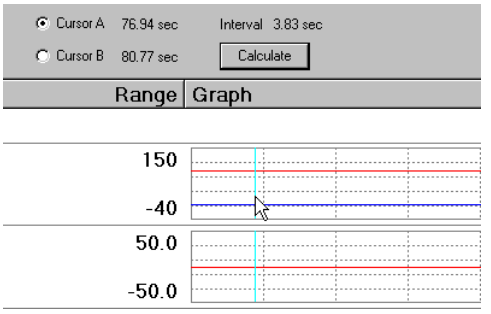
SMU-00826

3. The cursor selection buttons, cursor position times, cursor interval and [Calculate] button are displayed on the Sampling Status Bar.



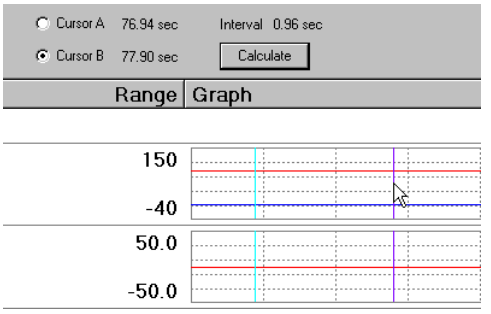
SMU-00708

4. The cursor selection button “Cursor A” is selected. Move graph Cursor A (light blue) to the desired position.



SMU-00709

5. Select “Cursor B” by the cursor selection button. Move graph Cursor B (purple) to the desired position.



SMU-00710

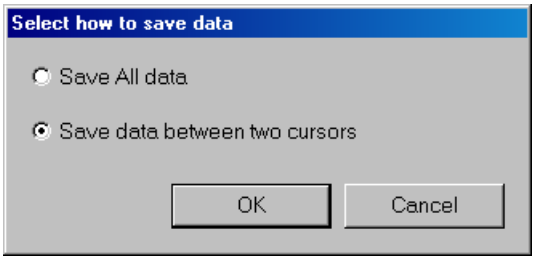
NOTE:
At this time, look at the Sampling Status Bar to confirm that the number of data in selected range is less than 50,000.

6. Click the icon on the Data List Toolbar, or the F9 Save button on the Function Key bar. You could also press the F9 function key on the PC keyboard.

SMU-00720

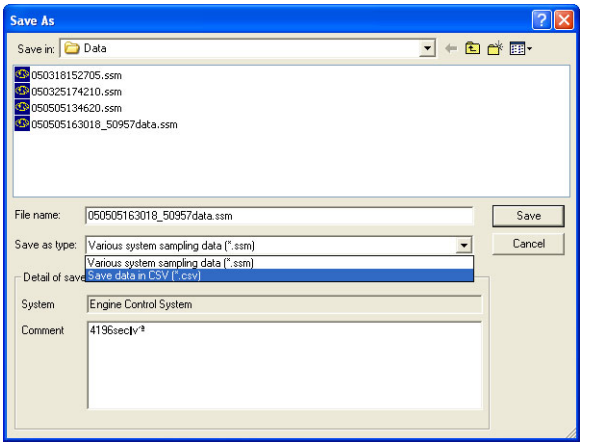
NOTE:
The Select how to save data screen in the next step can be displayed by selecting “Converting sampling data to CSV” from “File” in menu.

7. This displays the Select how to save data screen.
Select “Save data between two cursors” and click the [OK] button.



SMU-00721

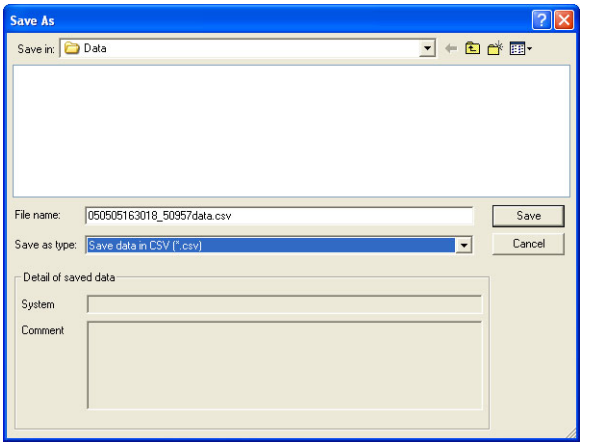
8. This displays a save dialog. Select “Save data in CSV (*.csv)” in “Save as type”.



SMU-00827

NOTE:
If you select “Converting sampling data to CSV” from “File” in menu, this step is not necessary.

9. Enter the desired file name, and click the [Save] button.



SMU-00828

NOTE:

- The file name in default setting will be “date and time” at the time of saving. You can save data with the same file name as previous one when converting data to CSV even if you use cut-and-save. (The previous file is not overwritten because their extensions are different.)
- CSV files are saved in the Data folder where the PC application is installed. To change to another storage location, specify the location you want in the Save in box of the save data dialog box.

Saving Displayed Data

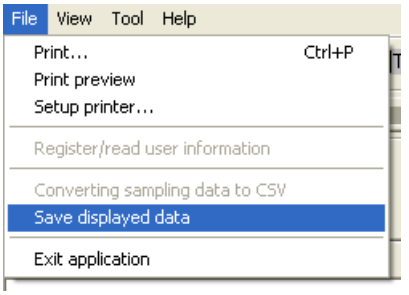
On the sampling screen or saved data display screen, you can save the screen as a graphic file.

NOTE:

- Displayed data of sampling result display (except Roughness Monitor) can be saved.
- The data is saved in BMP (bitmap) format.

How to Save

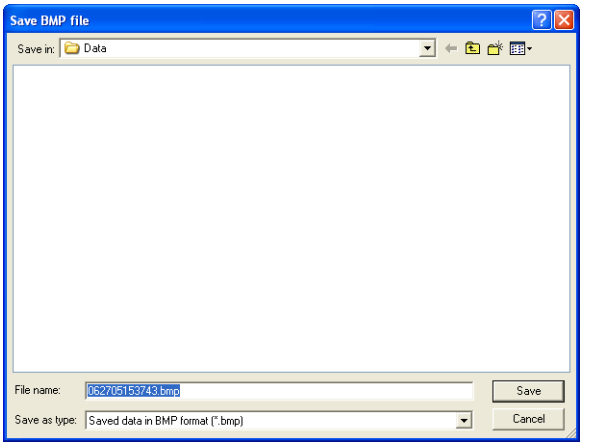
1. Display the sampling screen or saved data display screen. If you display the sampling screen, stop sampling.
2. Select “Save displayed data” from “File” in menu.



SMU-00829

3. This causes the displayed data save dialog to appear.

   Enter the desired file name, and click the [Save] button in dialog box.



SMU-00830

NOTE:

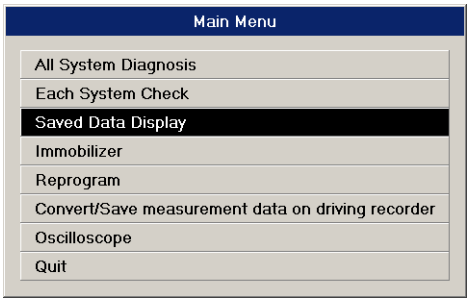
- The file name in default setting will be “date and time” at the time of saving sampled data if you save sampling data, and it will be the same name as saved data if you open the saved data.
- Screen data files are saved in the Data folder where the PC application is installed. To change to another storage location, specify the location you want in the Save in box of the save data dialog box.

Saved Data Display

Use the following procedure to recall data that was saved during fault diagnosis and view it on the PC display.

1. Double-click the SSMIII icon on the PC screen to start up the application.

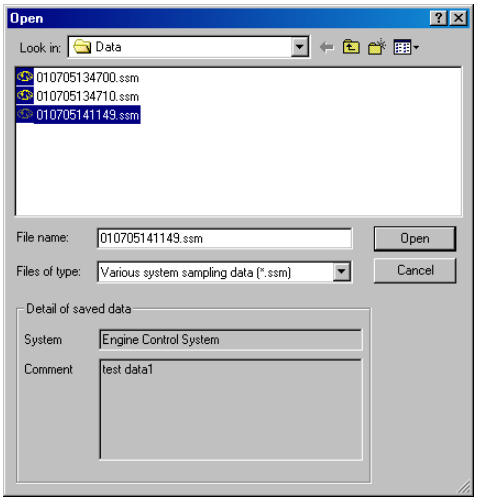
   On the Main Menu that appears on the display, select [Saved Data Display] and then press the Enter key or left-click with the mouse.



SMU-00602

2. The dialog box with a list of saved data files is displayed.

   After selecting “Files of type”, designate the file you need, and press the Enter key or click the [Open] button.



SMU-00697

3. This recalls the data in the file and displays it on the Digital Data Screen.

NOTE:
Supported data file name extensions are described below. Use the [Files of types] box to select the file type you want to view.

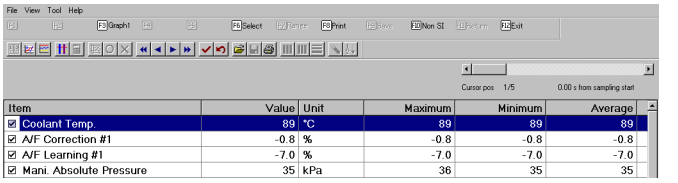
.ssm: This extension is used for a file that contains data saved from the Digital Data Screen or Graph Screen.

.obd: This extension is used for a file that contains data saved by OBD system failure diagnosis.

.sdr: This extension is used for a file that contains data saved by driving recorder.

.biu: This extension is used for a file that contains data saved a body integrated unit customizing list.

.ocl: This extension is used for a file that contains data saved by analog sampling.



SMU-00590

NOTE:
You can also view saved data by double clicking the sample data file.
Opening the folder where the data file is located and double-clicking the desired file will start up the PC application automatically and display the data’s analysis screen. Note, however, that if you start up the PC application this way, you will not be able to change to the sampling screen. If you want to sample data, start up the PC application using the procedure under “Starting Up the System”.

Display Screen Operations

The Data List Toolbar buttons and the Sampling Status Bar functions on the saved data display screen are somewhat different from those on the Digital Data Screen and Graph Screen. The buttons and functions on the saved file display screen are designed to make it easy to find a desired location within the recalled data.

Data Scroll Buttons

The data scroll buttons on the Data List Toolbar are for moving the graph cursor.
Clicking [<] or [>] scrolls back or forward by one data item. You can also scroll back or forward by 1 data item by pressing the left or right arrow key on PC keyboard.
Clicking [<<] or [>>] moves the graph cursor one screen back or forward.
You can also make the graph cursor jump back or forward by 10 data items by holding down the Ctrl key and pressing the left or right arrow key on the PC keyboard.

SMU-00220

Data Cut-and-Save

After displaying previously saved sampling data, you can cut-and-save parts of the displayed data and store it in another file.
For information about how to do this, see “Two Cursor Analysis”.

NOTE:
The name of the data file you take out from the original data CANNOT be the same as that of the original file.
In case of cutting and saving data, the file name must be changed to something different from the original file name.

Other Operations

The marking function, cursor numerical value information between two points, range change, and other similar operations can be performed on recalled sample data using the same procedures you use during data sampling.
You can also save recall data, edit it, and store your edits.

Multiple display of saved data

Multiple display of data saved by SSMIII on the screen of the personal computer is possible.
There are the following two operation methods for display.

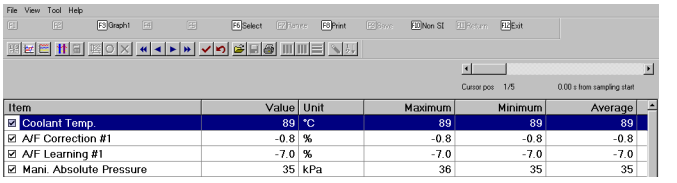
- Display from the SSMIII icon on the screen of the personal computer.
- Display from the icon on the Data list toolbar.

NOTE:

- Multiple display of saved files is possible for a maximum of five times.
- Multiple display of the high-grade roughness monitor saved file (.cym) cannot be done from the icon on the data list toolbar.

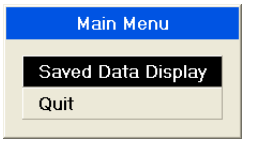
Display from the SSMIII icon on the screen of the personal computer

1. Display one of the targeted saved data.
For the display method, refer to the procedure in the section “Saved Data Display”.



SMU-00590

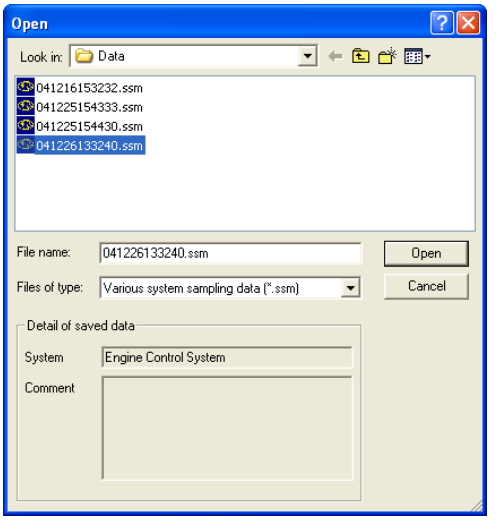
2. Display the desktop and double-click the SSMIII icon.
On the Main Menu that appears on the display,select [Saved Data Display] and then press the Enter key or left-click with the mouse.



SMU-00890

NOTE:
When multiple saved data are displayed, only a part of the items of the “Main Menu” is displayed. Accordingly, other items cannot be selected. For use of the other functions, leave one of the saved data and close all others. All items of the Main Menu can be selected when only one saved data is displayed.

3. The dialog box with a list of saved data files is displayed.
After selecting “Files of type”, designate the file you need, and press the Enter key or click the [Open] button.

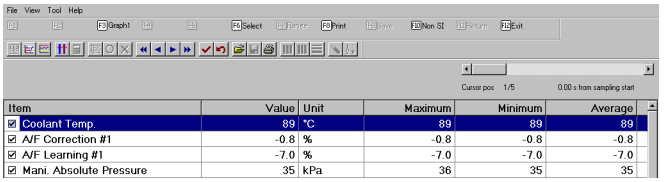


SMU-00891

4. The targeted file is displayed. For additional display of other saved data, return to step 2 and select the saved data.

Display from the icon on the Data list toolbar

1. Display one of the targeted saved data.
For the display method, refer to the procedure in the section “Saved Data Display”.

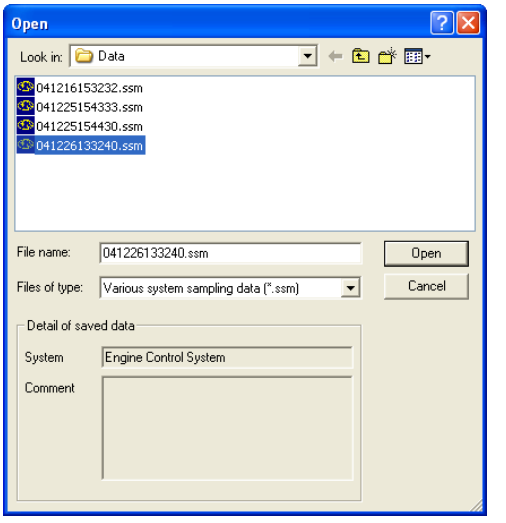


SMU-00590

2. Click the icon on the Data List Toolbar.
Select the desired file from the list of files that appears on the display.

SMU-00591

3. The dialog box with a list of saved data files is displayed.
After selecting “Files of type”, designate the file you need, and press the Enter key or click the [Open] button.



SMU-00891

4. The targeted file is displayed. For additional display of other saved data, return to step 2 and select the saved data.

NOTE:
- Saved data multiple display can also be done by double-clicking the saved file of sampling data. By double-clicking multiple files after opening the folder in which the saved files are saved, the multiple saved data analysis screens are displayed. however, that if you start up the PC application this way, you will not be able to change to the sampling screen. If you want to sample data, start up the PC application using the procedure under “Starting Up the System”.
- Multiple display is possible for the following types of files.

.ssm: This extension is used for a file that contains data saved from the Digital Data Screen or Graph Screen.

.obd: This extension is used for a file that contains data saved by OBD system failure diagnosis.
.sdr: This extension is used for a file that contains data saved by driving recorder.
.biu: This extension is used for a file that contains data saved a body integrated unit customizing list.
.ocl: This extension is used for a file that contains data saved by analog sampling.
cym: This extension is used for a file that contains data saved by High-Grade Roughness Monitor.

- Multiple display of saved data with the same name is not possible.
- When SSMIII is started again after a .cym file has been opened and the display language is switched, the language for the .cym file will not switch.
- When SSMIII is started again after a .biu file has been opened and the display language is switched, the language of the .biu file will not be switched only for the inspection result.
- When the file name of a window minimized to the taskbar is confirmed, the file name is displayed at the beginning, but in case of a .cym file, the file name is displayed at the end.

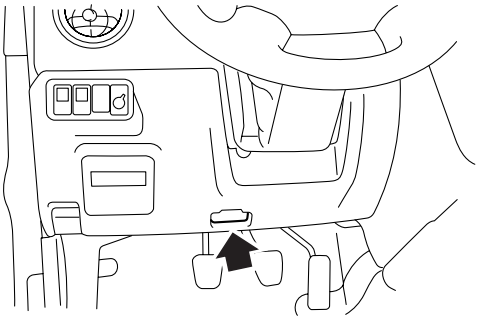
Diagnostic Codes Display

Use the following procedure to check the diagnostic codes memorized by the control module, and cancel codes.

Getting Ready

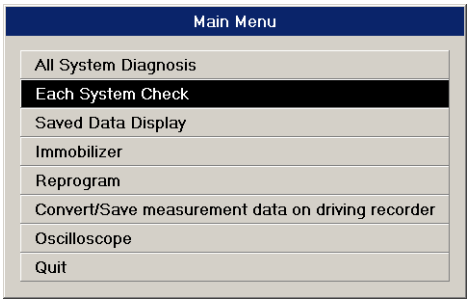
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



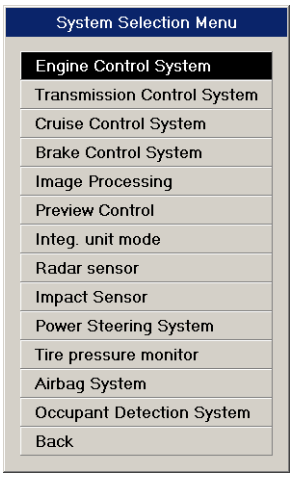
SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle's ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



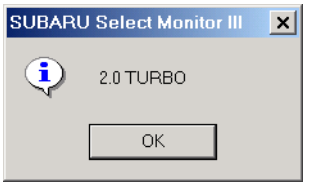
SMU-00600

7. On the System Selection Menu, select the desired system and then press the Enter key or left-click with the mouse. (As an example, "Engine" is selected.)



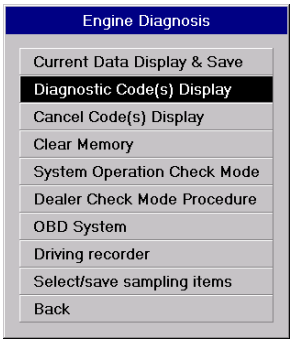
SMU-00665

8. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.



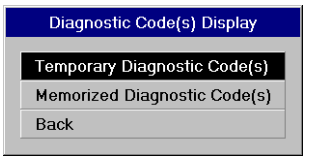
SMU-00128

9. From the list of fault diagnosis items, select [Diagnostic Code(s) Display] and then press the Enter key or left-click with the mouse.



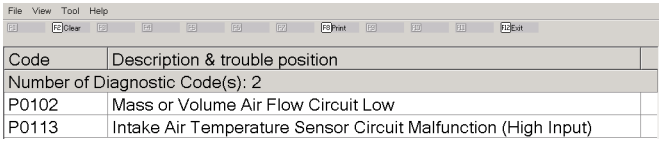
SMU-00734

*10.*Select the desired item and then press the Enter key or left-click with the mouse.



SMU-00543

*11.*This causes the Diagnostic Code Screen to appear.



SMU-00230

NOTE:
The contents of the display screen depend on the system being diagnosed, vehicle model and specifications, and system fault diagnosis mode.

{Latest Diagnostic Code(s)}
This shows the latest diagnostic codes detected by the control module.

{Memorized Diagnostic Code(s)}
This shows diagnostic codes detected in the past that are memorized by the control module, and the latest currently detected diagnostic codes.

{D-Check Diagnostic Code(s)}
This shows the results of fault diagnosis in the dealer check mode.

{Temporary Diagnostic Code(s)}
This shows temporary codes detected by the OBD system.

{Current Diagnostic Code(s)}
This shows diagnostic codes currently detected by the control module.

{History Diagnostic Code(s)}
This shows diagnostic codes detected in the past that are memorized by the control module, and the latest currently detected diagnostic codes.

NOTE:
Executing memory clear deletes all diagnostic codes that are currently memorized by the control module.

When no diagnostic codes are displayed

The message shown below appears if there are no diagnostic codes currently memorized by the control module.

SMU-00228

In accordance with the instructions provided, click the [OK] button.

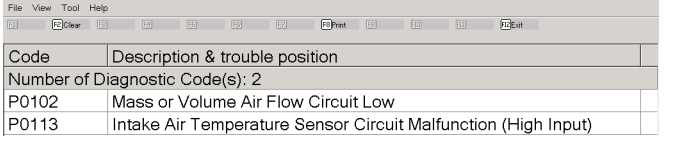
The message shown below appears if there are no cancel codes currently memorized by the control module when cruise control system cancel codes are checked.

SMU-00229

NOTE:
In the case of a vehicle that is demonstrating a fault that cannot be detected by diagnostic codes, perform repair work in accordance with the fault diagnostic procedures in the Service Manual.

When diagnostic codes are displayed

A screen showing the diagnostic codes and any message text related to the source of the fault appears if there are diagnostic codes memorized by the control module.



SMU-00230

Executing Memory Clear

Click the F2 Clear button on the Function Key Bar or the F2 function key on the PC keyboard.

Printing the Diagnostic Code Screen

Click the F8 Print button on the Function Key Bar or the F8 function key on the PC keyboard.

Returning to the Fault Diagnosis Menu Screen

Click the F12 Exit button on the Function Key Bar or the F12 function key on the PC keyboard.

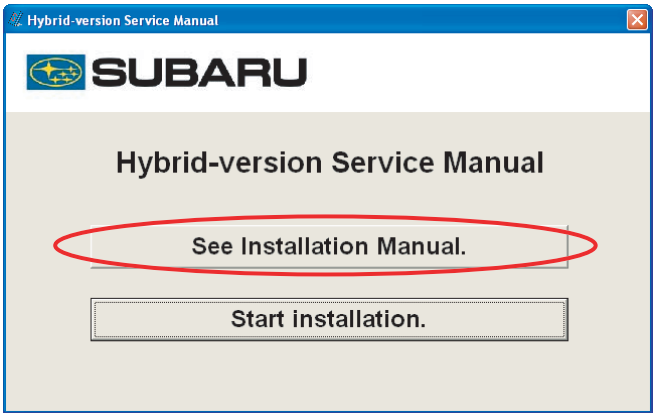
Manual Link (Excluding North America)

* This function is not supported in North America.

Manual Link is the fusion of SSMIII and Service Manual on a PC. Until now it was necessary to search the Service Manual for each model and then to search the corresponding page. However, when a Hybrid-version Service Manual compatible with Manual Link is installed on a PC where SSMIII is installed, the corresponding diagnosis page of the Service Manual can be found by simple operation from the DTC detected by “Diagnostic Code(s) Display” of SSMIII. Manual Link makes it possible to aim for better efficiency by reducing the time required to search for the corresponding manual.

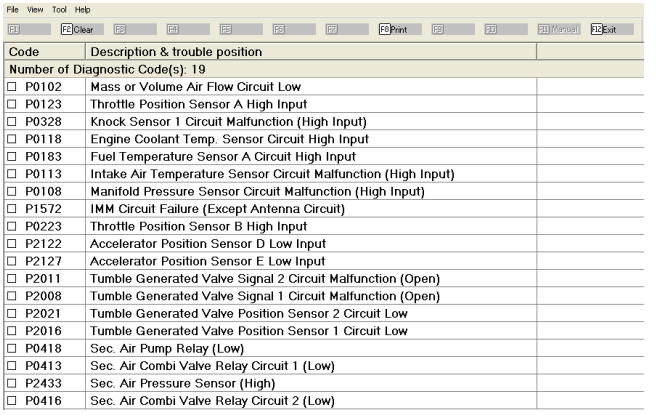
NOTE:

- This function may not be available in the case of certain vehicle models.
- The Manual Link function can be used for “All System Diagnosis” and for “Diagnostic Code(s) Display” for each system.
- The following software is required to use the Manual Link function and should be installed in advance.
  Internet Explorer 5.5 or higher (6.0 or higher recommended)
  Adobe Acrobat Reader 4.0 or higher
- Please install the Service Manual for each model to be diagnosed in advance for use of the Manual Link function. For the installation method, refer to the Installation Manual by clicking “See Installation Manual” in the menu displayed at the time of installation of the Hybrid-version Service Manual. At the time of installation, install the SSMIII PC application first and then the Service Manual. When the SSMIII PC application has not been installed, the Service Manual cannot be installed.



SMU-00889

1. Display the DTC check result screen. (Checking of engine DTC is showed as an example here.)

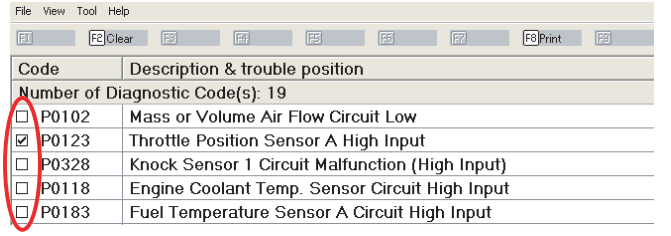


Code	Description & trouble position
Number of Diagnostic Code(s): 19	
P0102	Mass or Volume Air Flow Circuit Low
P0123	Throttle Position Sensor A High Input
P0328	Knock Sensor 1 Circuit Malfunction (High Input)
P0118	Engine Coolant Temp. Sensor Circuit High Input
P0183	Fuel Temperature Sensor A Circuit High Input
P0113	Intake Air Temperature Sensor Circuit Malfunction (High Input)
P0108	Manifold Pressure Sensor Circuit Malfunction (High Input)
P1572	IMM Circuit Failure (Except Antenna Circuit)
P0223	Throttle Position Sensor B High Input
P2122	Accelerator Position Sensor D Low Input
P2127	Accelerator Position Sensor E Low Input
P2011	Tumble Generated Valve Signal 2 Circuit Malfunction (Open)
P2008	Tumble Generated Valve Signal 1 Circuit Malfunction (Open)
P2021	Tumble Generated Valve Position Sensor 2 Circuit Low
P2016	Tumble Generated Valve Position Sensor 1 Circuit Low
P0418	Sec. Air Pump Relay (Low)
P0413	Sec. Air Combi Valve Relay Circuit 1 (Low)
P2433	Sec. Air Pressure Sensor (High)
P0416	Sec. Air Combi Valve Relay Circuit 2 (Low)

SMU-00881

NOTE:
Refer to the corresponding item for the “Diagnostic Code(s) Display” procedure.

2. Enter a check mark into the checkbox for the DTC to be viewed in the Service Manual.

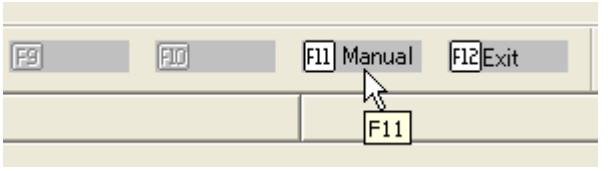


Code	Description & trouble position
Number of Diagnostic Code(s): 19	
☐ P0102	Mass or Volume Air Flow Circuit Low
☑ P0123	Throttle Position Sensor A High Input
☐ P0328	Knock Sensor 1 Circuit Malfunction (High Input)
☐ P0118	Engine Coolant Temp. Sensor Circuit High Input
☐ P0183	Fuel Temperature Sensor A Circuit High Input

SMU-00882

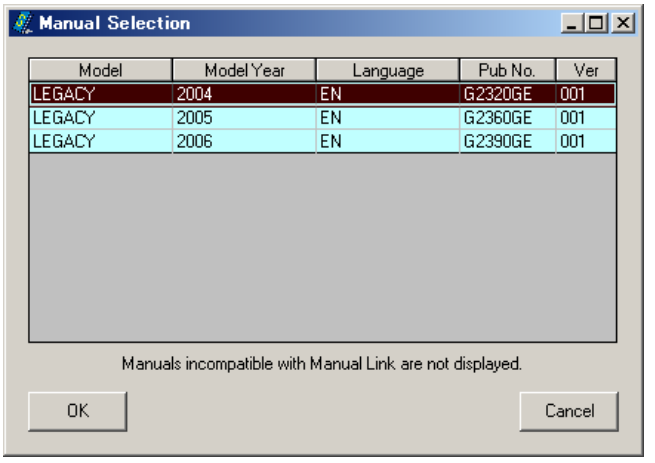
NOTE:
A check mark can be entered only for one DTC.

3. Click the F11 Manual button on the Function Key Bar, or press the F11 function key on the PC keyboard.



SMU-00883

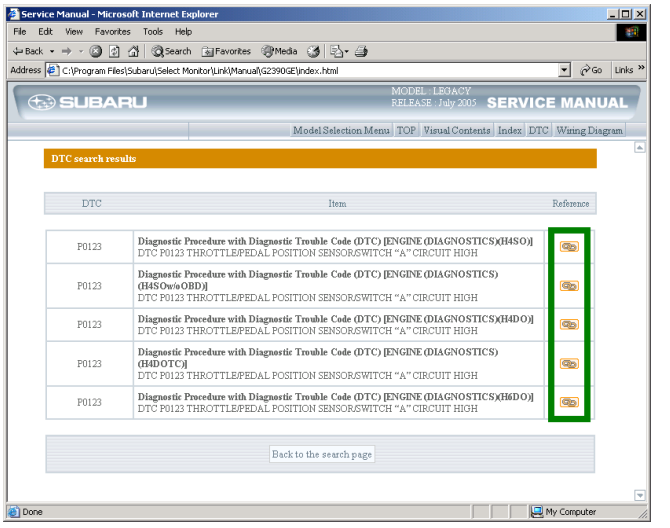
4. The Manual Selection screen is displayed. Select the desired manual and click the [OK] button.



SMU-00884

NOTE:
The Service Manual selected here is applied until return is made to the “System Selection Menu” screen. When view to a different Service Manual is desired, return once to the “System Selection Menu” and restart SSMIII.

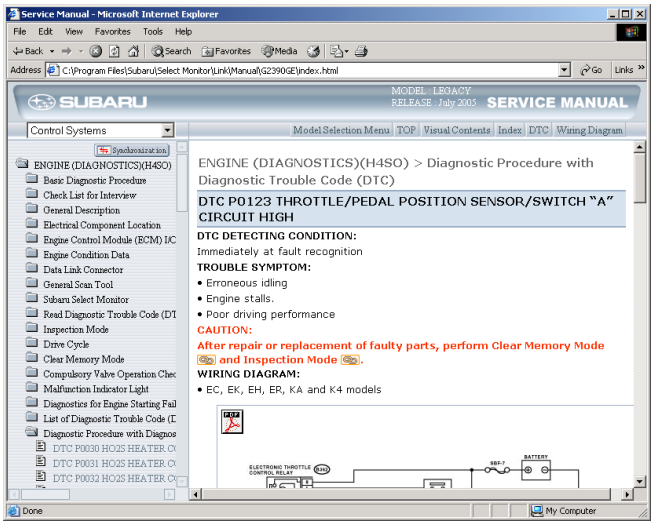
5. The DTC search result screen for the Service Manual is displayed. Click the reference button for the desired model.



SMU-00885

NOTE:
This screen is not displayed when the search result shows only one model.

6. The fault diagnosis screen for the Service Manual is displayed. For the operation procedure from this point on, refer to the “Service Manual Guide”.



SMU-00886

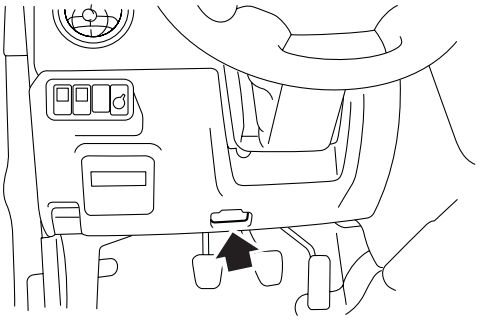
Clearing Memory

Use the following procedure to delete the diagnostic codes memorized by the control modules of each system after correcting the fault.

Getting Ready

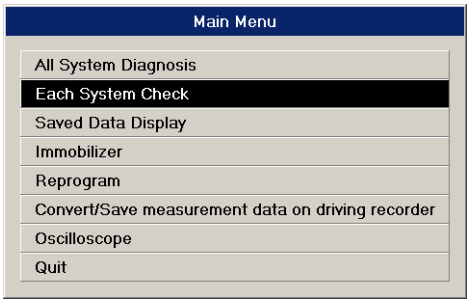
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



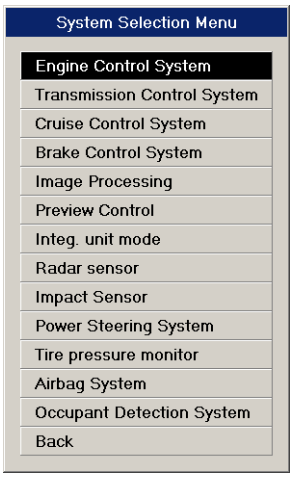
SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle's ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



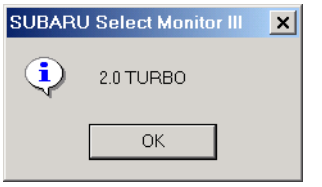
SMU-00600

7. On the System Selection Menu, select the desired system and then press the Enter key or left-click with the mouse. (As an example, "Engine" is selected.)



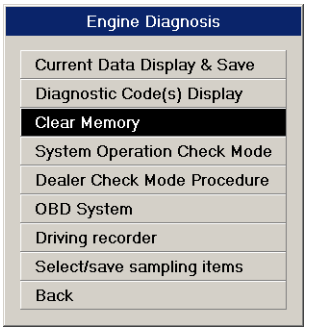
SMU-00665

8. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.



SMU-00128

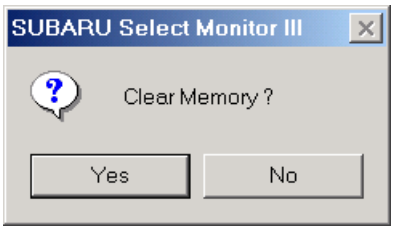
9. From the list of fault diagnosis, select [Clear Memory] and then press the Enter key or left-click with the mouse.



SMU-00603

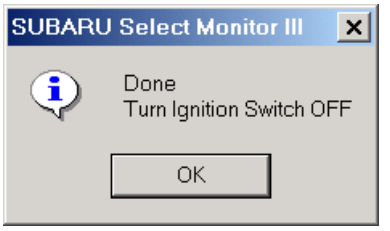
*10.*This causes a memory clear confirmation message to appear.

Use the mouse to click the [Yes] button.



SMU-00239

Executing the memory clear operation causes the message shown below to appear. In accordance with the instructions of the message, turn off the vehicle's ignition switch and then use the mouse button to click [OK].



SMU-00240

NOTE:
Also, there are some systems that do not have a memory clear item on the fault diagnosis screen. With such a system, the dialog box will disappear from the display when you turn off the vehicle's ignition switch.

Transmission System Memory Clear 2

On the fault diagnosis screen for the transmission system, [Clear Memory] and [Clear Memory 2] items may be displayed.
Selecting the [Clear Memory 2] item deletes diagnostic codes and learning control values memorized by the transmission control module.

Airbag System Memory Clear

To execute the memory clear operation in the airbag system, you must first completely service all problems. If there is even one problem remaining, the memory clear operation cannot be executed.

System Operation Check Mode

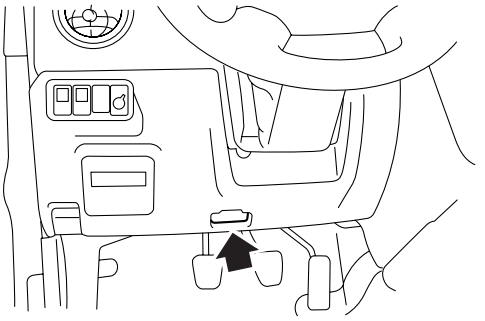
Use the following procedure to force operation of engine control system actuators to check their operation.

NOTE:
This function is not supported in some vehicle models.

Getting Ready

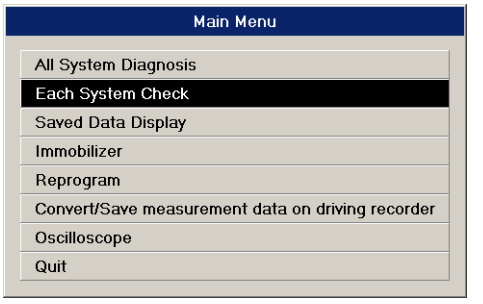
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



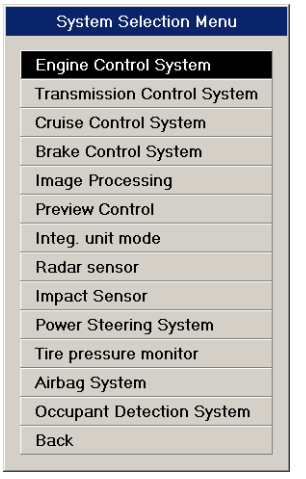
SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle's ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



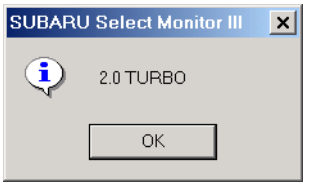
SMU-00600

7. On the System Selection Menu, select [Engine Control System] and then press the Enter key or left-click with the mouse.



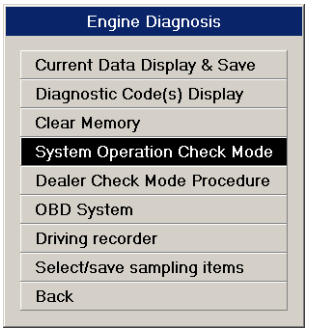
SMU-00665

8. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.



SMU-00128

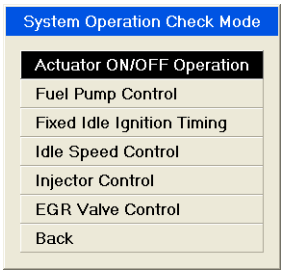
9. From the list of fault diagnosis, select [System Operation Check Mode] and then press the Enter key or left-click with the mouse.



SMU-00604

10. This displays a system operation check mode menu screen.

Select the desired item and then press the Enter key or left-click with the mouse.



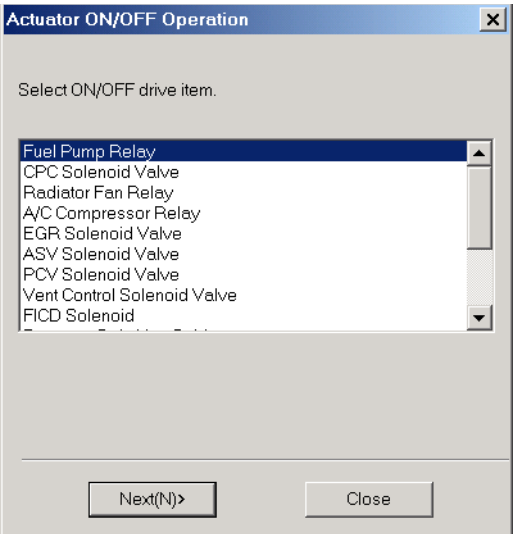
SMU-00877

IMPORTANT:
In System Operation Check Mode, if you work on this in the mode with the engine started, it must only be done when the engine is idling. It is very dangerous if you work on this mode while the vehicle is running, because the engine may stall or the brakes may lose some of the braking force depending on the settings.

NOTE:
The display items that appear depend on the model and specifications of the vehicle on which fault diagnosis is being performed.

Actuator ON/OFF Operation

This function is used to perform test operation of various actuators related to the engine control system. The test mode connector needs to be connected in order to perform the test.
Selecting actuator ON/OFF operation on the system operation check mode screen causes the screen shown below to appear. Select the desired item and then click the Next(N)> button to force operation of the actuators for testing.



SMU-00248

NOTE:
Make sure the vehicle's ignition switch is off before connecting or disconnecting the test mode connector.

Fuel Pump Control

This function has 2 modes: the fuel pump "OFF Drive" mode and the fuel pump "ON/OFF Drive"mode.

NOTE:
- The test mode connector does not need to be connected to operate this function.
- Always execute "Clear Memory" after operating this function.

OFF Drive

Use this function to turn the fuel pump OFF and remove the residual pressure in the fuel pipe.
Follow the on-screen instructions to execute this procedure.

IMPORTANT:
This mode should be executed at the time of idling. When the accelerator pedal has been depressed etc., so that the engine is not in idling condition, this mode is stopped and the fuel pump becomes ON.

ON/OFF Drive

Use this function to turn the fuel pump ON/OFF and remove the fuel in the fuel tank.
Follow the on-screen instructions to execute this procedure.

IMPORTANT:
Do not operate the fuel pump if there is no fuel in the fuel tank; otherwise, the fuel pump may be damaged.

Fixed Idle Ignition Timing

This function fixes the ignition timing during idling, and by stopping the “idle ignition timing correction”, it allows you to check the basic idle ignition timing and whether the idle ignition timing control is operating properly. Follow the on-screen instructions to execute this procedure.

NOTE:
- The test mode connector does not need to be connected to operate this function.
- The ignition timing fixed value varies depending on the vehicle model. Also, the fixed value cannot be changed.
- The engine speed may vary while this mode is operated.
- Always execute “Clear Memory” after operating this function.

Idle Speed Control

This function allows you to set the idle speed you want.
Follow the on-screen instructions to execute this procedure.

NOTE:
- The test mode connector does not need to be connected to operate this function.
- Depending on conditions such as vehicle model and elevation, the actual idle speed may not go up when the idle speed setting is raised.
- Always execute “Clear Memory” after operating this function.

Injector Control

This function has two modes: “Injection Stop Mode” and “Injection Quantity Control” mode.

NOTE:
- The test mode connector does not need to be connected to operate this function.
- Always execute “Clear Memory” after operating this function.

Injection Stop Mode

This function allows you to stop any cylinder injector when identifying which cylinder is malfunctioning.
Follow the on-screen instructions to execute this procedure.

Injection Quantity Control

The injection quantity can be increased according to the set percentage. This function can be used in cases such as when the engine is not running properly and you need to check whether the problem is a lean air-fuel ratio.
Follow the on-screen instructions to execute this procedure.

IMPORTANT:
- Keep in mind that increasing the injection quantity may cause fuel to stick to the spark plugs, resulting in engine malfunction.
- Avoid running the engine for a long period of time with the injection quantity increased, or else the emissions will deteriorate.

EGR Valve Control

This function allows you to operate the EGR valve in a preset number of steps and control the EGR rate to a desired value. It is a means of checking whether or not the EGR valve is working properly.
Follow the on-screen instructions to execute this procedure.

NOTE:
- The test mode connector does not need to be connected to operate this function.
- The number of steps that can be set varies depending on the vehicle models.
- Always execute “Clear Memory” after operating this function.

Dealer Check Mode Procedure

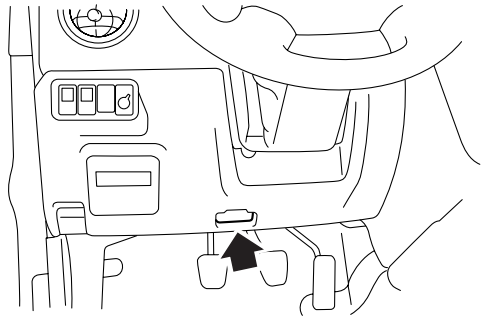
This function can be used to perform inspection of a simplified dealer check by performing operations as prompted by messages that appear on the PC display.

The Dealer check mode procedure is one of the self-diagnostic functions of the control module. The dealer check mode provides the means to perform more thorough system fault diagnosis.

Getting Ready

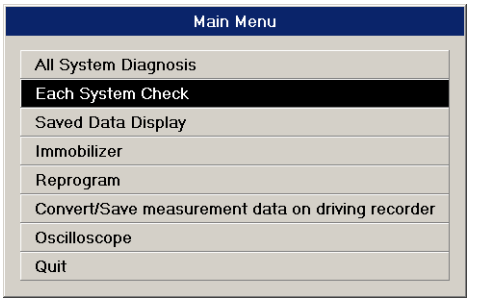
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



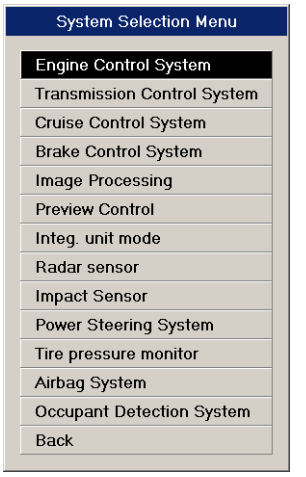
SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Connect the test connector. (Make sure that the vehicle's ignition switch is OFF.)
5. Turn on the vehicle's ignition switch.
6. Double-click the SSMIII icon on the PC screen to start up the application.
7. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



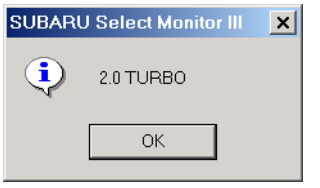
SMU-00600

8. On the System Selection Menu, select [Engine Control System] and then press the Enter key or left-click with the mouse.



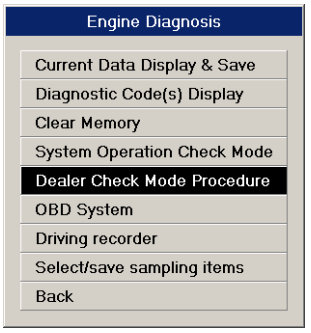
SMU-00665

9. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.



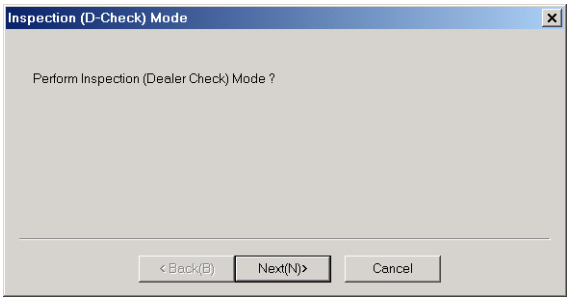
SMU-00128

*10.*From the list of fault diagnosis item, select [Dealer Check Mode Procedure] and then press the Enter key or left-click with the mouse.



SMU-00605

This displays an operation confirmation message. As instructed by the message, click the Next(N)> button.



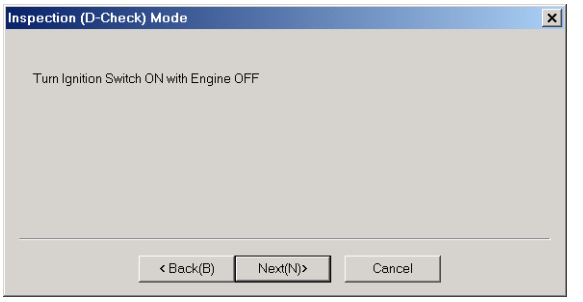
SMU-00255

This displays the Dealer check mode operation instruction screen. Perform Dealer check mode operations in accordance with the instructions that appear.

NOTE:

- The test mode connector must be connected in order to perform the Dealer check mode.
- When performing the Dealer check mode while the vehicle is in operation, never allow the driver to operate the SSMIII or SDI.

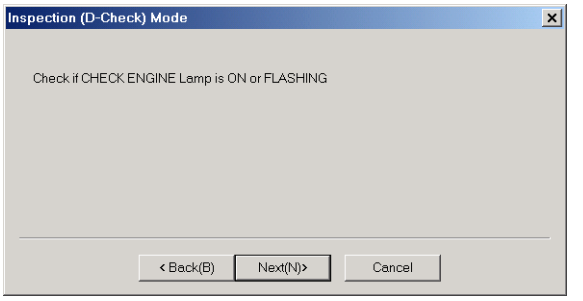
Entering the Dealer Check Mode



SMU-00256

As instructed by the display message, turn on the vehicle's ignition switch (make sure that the engine is currently not running).
Click Next(N)> button to advance to the next screen, or the < Back(B) button to return to a previous screen. To exit the Dealer check mode, click the Cancel button.

Check Engine Lamp Check



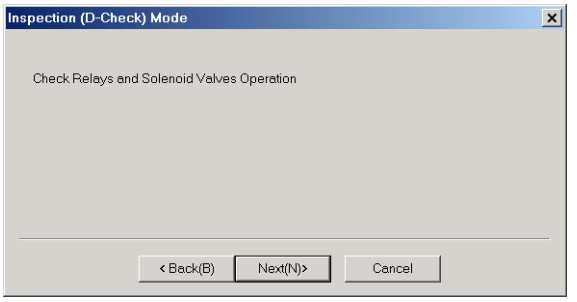
SMU-00260

Inspect the check engine lamp to see if it is lit or flashing.

If the check engine lamp is lit or flashing, click the Next(N)> button. Click the < Back(B) button to return to a previous screen or the Cancel button to cancel the Dealer check mode.

NOTE:
If the check engine lamp is not lit, perform fault diagnosis on the check engine lamp circuit as detailed in the Service Manual.

Actuator Operation Check



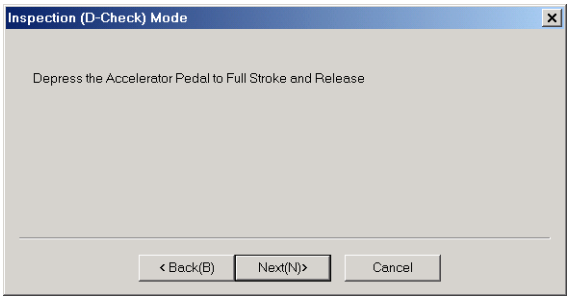
SMU-00264

This procedure checks for proper operation of the various actuators of the fuel pump, radiator fan, and other engine control system-related components.

When an actuator is operating normally, click Next(N)> button to advance to the next screen, or the < Back(B) button to return to a previous screen. To exit the Dealer check mode, click the Cancel button.

NOTE:
If an actuator abnormality is discovered, perform fault diagnosis in accordance with the Service Manual.

Throttle Valve Position Sensor Input Signal Check

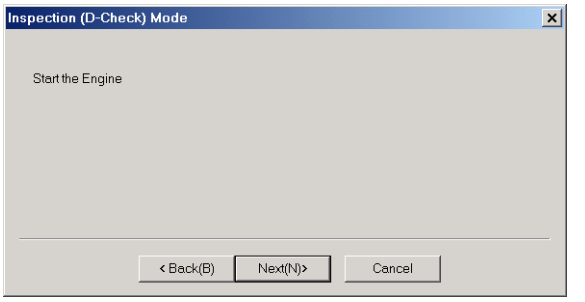


SMU-00268

Slowly press the accelerator pedal down as far as it will go, and then release it.

Click Next(N)> button to advance to the next screen, or the < Back(B) button to return to a previous screen. To exit the Dealer check mode, click the Cancel button.

Engine Start

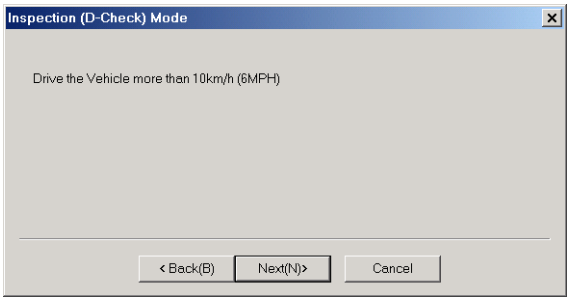


SMU-00272

Start the engine of the vehicle.

Click Next(N)> button to advance to the next screen, or the < Back(B) button to return to a previous screen. To exit the Dealer check mode, click the Cancel button.

Vehicle Speed Signal Check



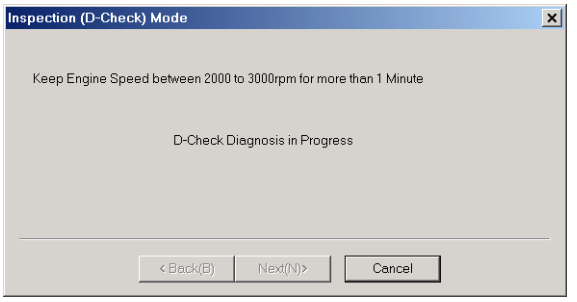
SMU-00276

Run the vehicle at a speed of at least 10km/h (6 MPH).

IMPORTANT:
When performing the Dealer check mode while the vehicle is in operation, never allow the driver to operate the SSMIII or SDI.

Click Next(N)> button to advance to the next screen, or the < Back(B) button to return to a previous screen. To exit the Dealer check mode, click the Cancel button.

O2 Sensor Check

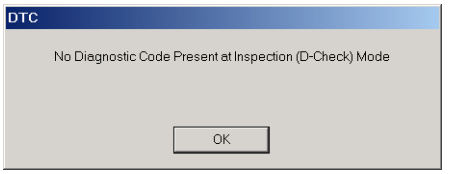


SMU-00280

Increase engine speed to the range of 2000 to 3000 rpm, and keep it there for at least one minute.
A diagnostic result display will appear after the Dealer check mode is complete.
To cancel the Dealer check mode part way through, click the Cancel button.

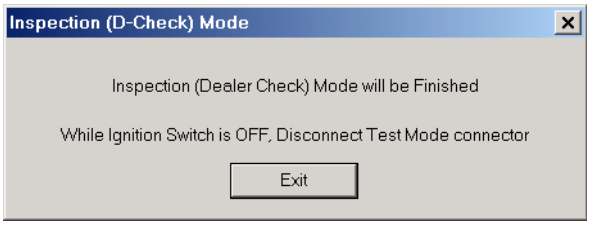
When no fault is detected by the Dealer check mode procedure

The dialog box shown below appears when no fault is detected.
Click the [OK] button.



SMU-00282

This displays dealer check mode ending screen.
Click the [Exit] button to complete the check.



SMU-00283

When a fault is detected by the Dealer check mode procedure

The applicable diagnostic code appears when a fault is detected.
Check the diagnostic codes, and perform repair work in accordance with Service Manual fault diagnosis procedures.

Code	Description & trouble position
Number of Diag.Code(D-Check): 2	
P0851	Neutral Switch Input Circuit Low
P0502	Vehicle Speed Sensor Low Speed

SMU-00284

NOTE:
After completing the Dealer check mode procedure, turn off the vehicle's ignition switch and disconnect the test mode connector.

OBD System

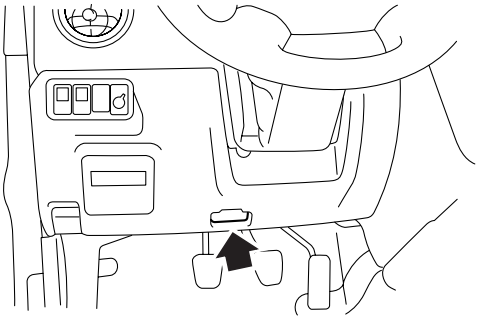
Vehicle fault diagnosis can be performed by checking the OBD system control parameters.

NOTE:
This function cannot be performed if the vehicle is not equipped with an OBD system.

Getting Ready

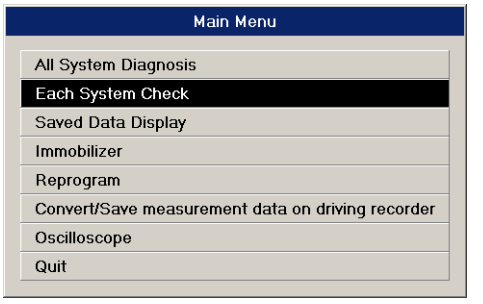
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



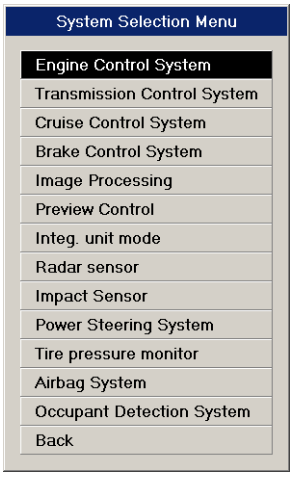
SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle's ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



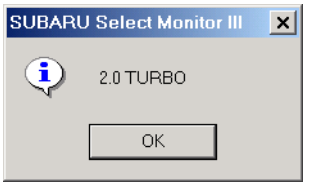
SMU-00600

7. On the System Selection Menu, select the desired system and then press the Enter key or left-click with the mouse. (As an example, "Engine" is selected.)



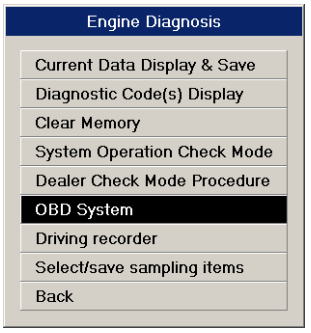
SMU-00665

8. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.



SMU-00128

9. From the list of fault diagnosis items, select [OBD System] and then press the Enter key or left-click with the mouse.

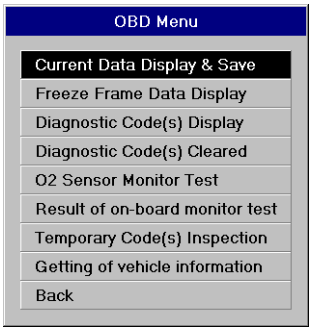


SMU-00606

10. This causes the OBD system menu screen to appear.

Select the desired item and then click the mouse.

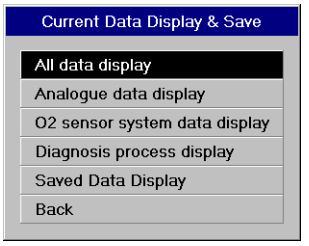
NOTE:
The items that appear depend on the system being diagnosed.



SMU-00545

Current Data Display & Save

Selecting [Current Data Display & Save] on the OBD menu screen displays the screen shown below.

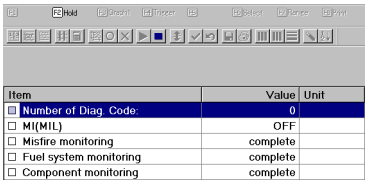


SMU-00546

The following describes the items that appear on this screen.

All data display

Use this item to check OBD system diagnostic results, and control module input signals, which are needed for diagnosis.

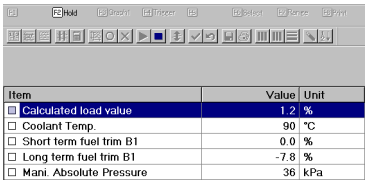


Item	Value	Unit
Number of Diag. Code:	0	
MI(MIL)	OFF	
Misfire monitoring	complete	
Fuel system monitoring	complete	
Component monitoring	complete	

SMU-00592

Analog data display Menu

Use this item to check control module input signals and control module control data.

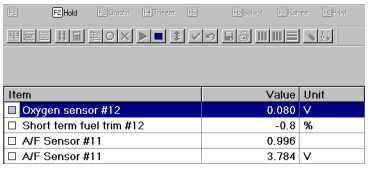


Item	Value	Unit
Calculated load value	1.2	%
Coolant Temp.	90	°C
Short term fuel trim B1	0.0	%
Long term fuel trim B1	-7.8	%
Mani. Absolute Pressure	36	kPa

SMU-00593

O2 sensor system data display

Use this item to check O2 sensor-related control module input signals and control data.

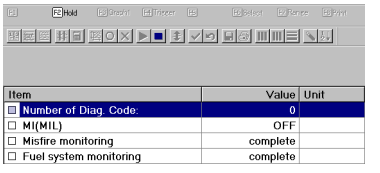


Item	Value	Unit
Oxygen sensor #12	0.080	V
Short term fuel trim #12	-0.8	%
A/F Sensor #11	0.996	
A/F Sensor #11	3.784	V

SMU-00594

Diagnosis process display

Use this item to check OBD system diagnostic results.

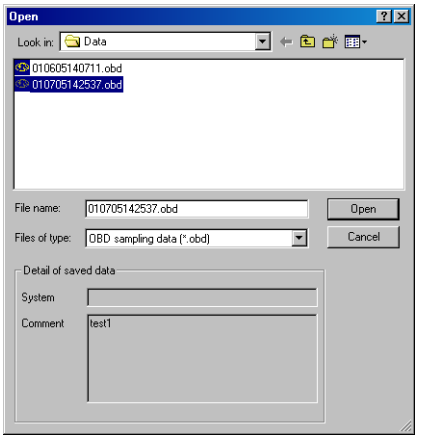


Item	Value	Unit
Number of Diag. Code:	0	
MI(MIL)	OFF	
Misfire monitoring	complete	
Fuel system monitoring	complete	

SMU-00595

Saved Data Display

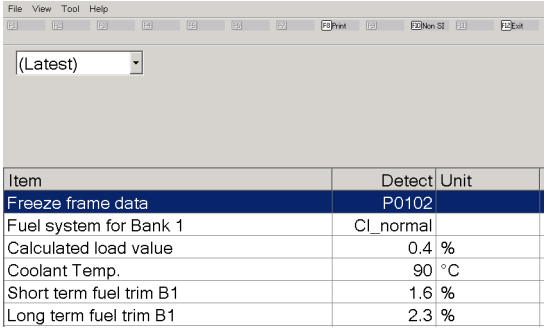
Use this item to recall and check data saved with the SSMIII OBD system.
On the file type dialog box, select “OBD sampling data (*.obd)”.



SMU-00698

Freeze Frame Data Display

Selecting [Freeze Frame Data Display] on the OBD menu displays a screen like the one shown below.
This screen can be used to check the input data to the control module at the point that the OBD system fault is detected.
The dialog box at the top of the screen can be used to select and display the data for up to three fault detection instances.

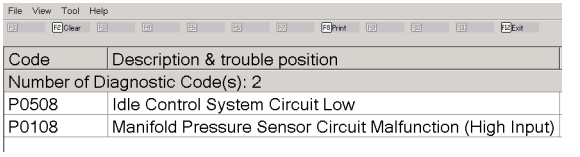


Item	Detect	Unit
Freeze frame data	P0102	
Fuel system for Bank 1	CI_normal	
Calculated load value	0.4	%
Coolant Temp.	90	°C
Short term fuel trim B1	1.6	%
Long term fuel trim B1	2.3	%

SMU-00297

Diagnostic Code Display

Selecting [Diagnostic Code(s) Display] on the OBD menu displays a screen like the one shown below.
This screen can be used to check diagnostic codes detected by the OBD system.

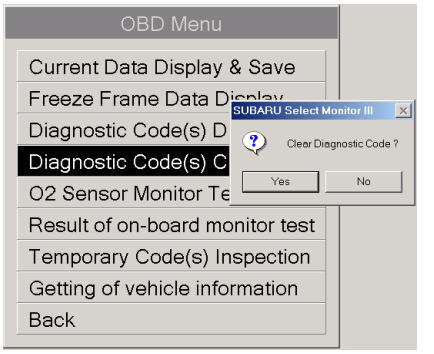


Code	Description & trouble position
Number of Diagnostic Code(s): 2	
P0508	Idle Control System Circuit Low
P0108	Manifold Pressure Sensor Circuit Malfunction (High Input)

SMU-00298

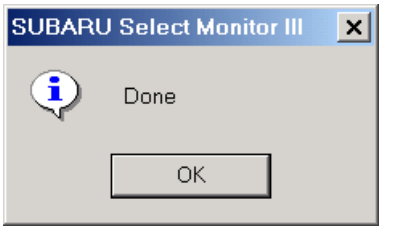
Diagnostic Code Clear

Selecting [Diagnostic Code(s) Cleared] on the OBD menu displays a dialog box like the one shown below.
As instructed by the dialog box text, click the [Yes] button to delete the diagnostic codes memorized by the control module.



SMU-00299

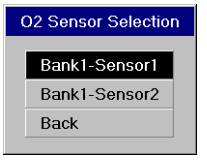
Executing the diagnostic clear operation causes the message shown below to appear.
Click the [OK] button.



SMU-00300

O2 Sensor Monitor

Selecting [O2 Sensor Monitor Test] on the OBD menu displays a screen like the one shown below. (This display screen is an example.)
The O2 sensor related control module input signal and control data screen can be displayed by selecting the item on the display that conforms to the vehicle being inspected. This makes it possible to check the current O2 sensor status.

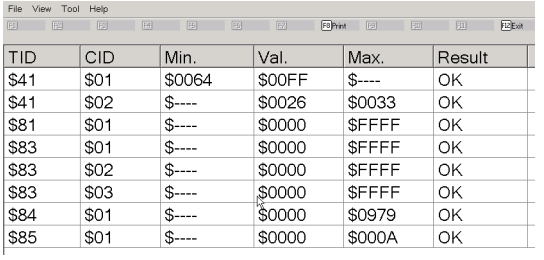


SMU-00547

NOTE:
Some functions may not be available in the case of certain vehicle models and vehicle specifications.

Onboard Monitor Test Results

Selecting [Result of on-board monitor test] on the OBD menu displays a screen like the one shown below.

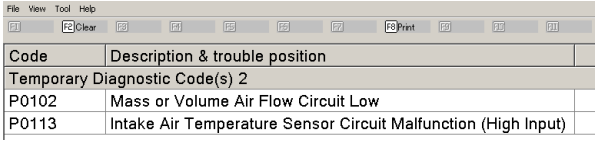


TID	CID	Min.	Val.	Max.	Result
$41	$01	$0064	$00FF	$----	OK
$41	$02	$----	$0026	$0033	OK
$81	$01	$----	$0000	$FFFF	OK
$83	$01	$----	$0000	$FFFF	OK
$83	$02	$----	$0000	$FFFF	OK
$83	$03	$----	$0000	$FFFF	OK
$84	$01	$----	$0000	$0979	OK
$85	$01	$----	$0000	$000A	OK

SMU-00302

Temporary Code Check

Selecting [Temporary Code(s) Inspection] on the OBD menu displays a screen like the one shown below.
This screen shows temporary codes detected by the OBD system.

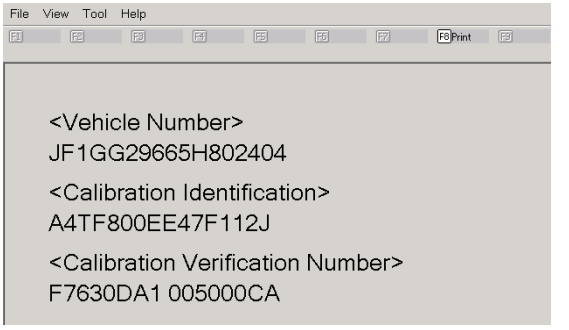


Code	Description & trouble position
Temporary Diagnostic Code(s) 2	
P0102	Mass or Volume Air Flow Circuit Low
P0113	Intake Air Temperature Sensor Circuit Malfunction (High Input)

SMU-00303

Get Vehicle Info

Selecting [Getting of vehicle information] on the OBD menu displays a screen like the one shown below.



SMU-00304

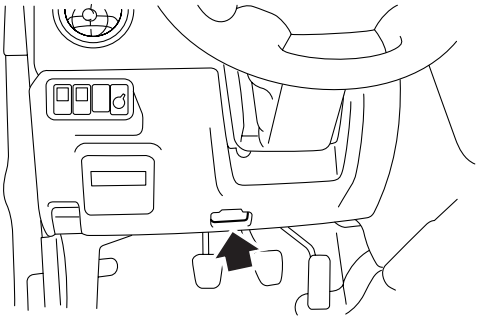
Function Check Sequence

The brake control system fault diagnosis screen includes a function check sequence item. The function check sequence can be used to perform checks of ABS system and VDC system hydraulic control valve operation, and to set the center point of the VDC system steering angle sensor and the 0 point of the lateral G sensor.

Getting Ready

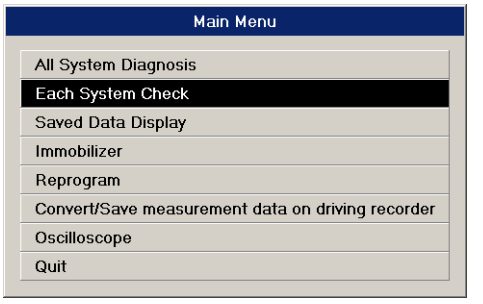
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



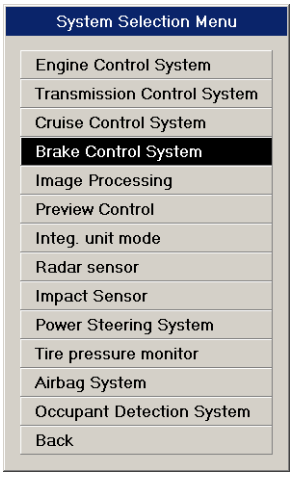
SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle's ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



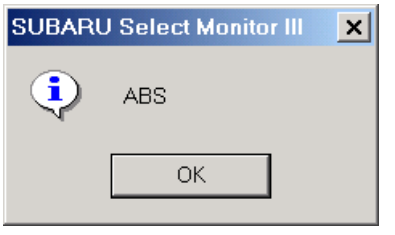
SMU-00600

7. On the System Selection Menu, select [Brake Control System] and then press the Enter key or left-click with the mouse.



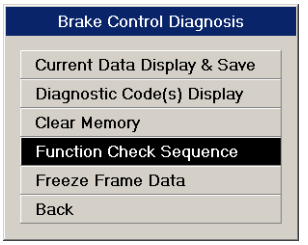
SMU-00669

8. This displays a compliance verification message for the brake control system. Click the [OK] button.



SMU-00308

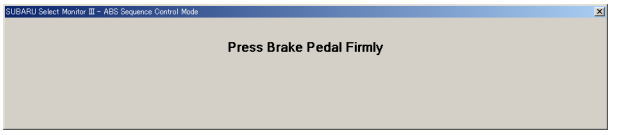
9. From the list of fault diagnosis items, select [Function Check Sequence] and then press the Enter key or left-click with the mouse.



SMU-00607

ABS Function Check Mode

Selecting the check sequence for a vehicle equipped with an ABS causes the screen shown below to appear.
Perform the procedure as instructed by the text on the screen will automatically enter the ABS function check mode and perform a hydraulic control valve operation check.



SMU-00670

NOTE:
- Keep the brake pedal depressed until the check is complete. Releasing the brake pedal while checking is part way through will result in an incorrect check.
- Connection of the test mode connector is not required for this check.
- Be sure to refer to the Service Manual when performing this check.

VDC Function Check Mode

Selecting the check sequence for a vehicle equipped with a VDC causes the screen shown below to appear.
Perform the procedure as instructed by the text on the screen will automatically enter the VDC function check mode and perform a hydraulic control valve operation check.

SMU-00413

NOTE:
- Connection of the test mode connector is not required for this check.
- Be sure to refer to the Service Manual when performing this check.

Steering Angle Sensor Neutral and Lateral G Sensor Zero Setting Mode

Selecting the steering angle sensor neutral and lateral G sensor zero setting mode for a vehicle equipped with a VDC causes the screen shown below to appear.
Follow the instructions that appear on the screen to set steering sensor neutral and lateral G sensor zero.

SMU-00414

NOTE:
- Connection of the test mode connector is not required for this check.
- Be sure to refer to the Service Manual when performing this setting operation.

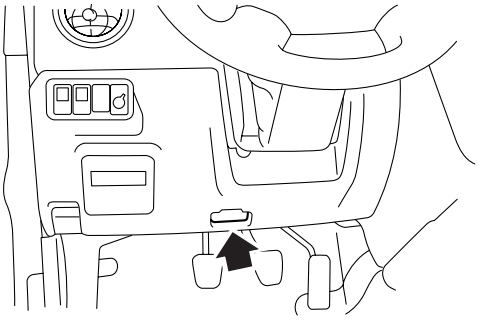
Fault Data Display

This display makes it possible to check control module input data and the module control status when the brake control system control module detects a fault.

Getting Ready

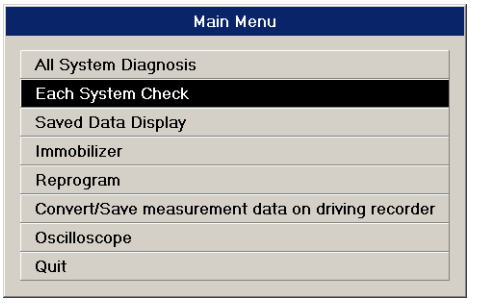
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



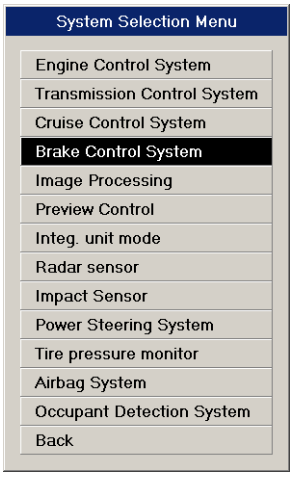
SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle's ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



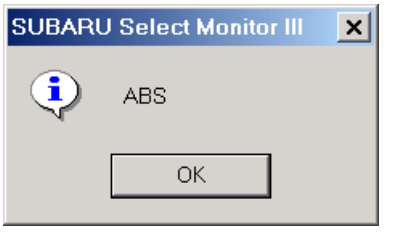
SMU-00600

7. On the System Selection Menu, select [Brake Control System] and then press the Enter key or left-click with the mouse.



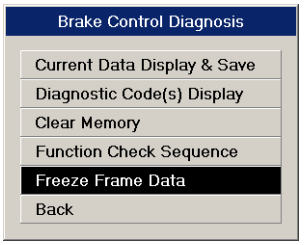
SMU-00669

8. This displays a compliance verification message for the brake control system. Click the [OK] button.



SMU-00308

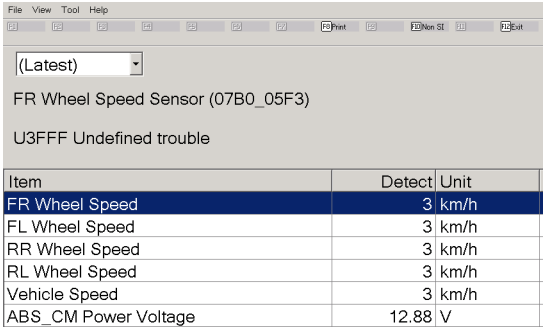
9. From the list of fault diagnosis items, select [Freeze Frame Data] and then press the Enter key or left-click with the mouse.



SMU-00608

10. Selecting [Freeze Frame Data] displays a screen like the one shown below.

The select box at the top of the screen can be used to select and display the data for up to three fault detection instances.



Item	Detect	Unit
FR Wheel Speed	3	km/h
FL Wheel Speed	3	km/h
RR Wheel Speed	3	km/h
RL Wheel Speed	3	km/h
Vehicle Speed	3	km/h
ABS_CM Power Voltage	12.88	V

SMU-00316

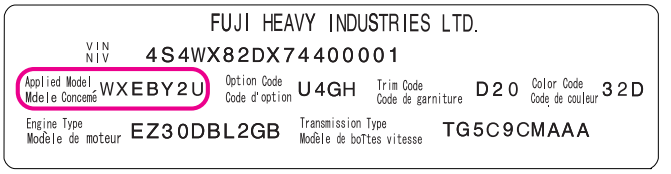
NOTE:

- The control module always maintains the three latest fault information entries in memory.
- If the screen shows a diagnostic code with a question mark (?), it means that the fault information was not stored correctly by the control module when the fault was detected.

Selection of Parameter

This function is used to select/register parameters when the VDC control module has been replaced with a normal spare part.

NOTE:
- Always execute “Clear Memory” after operating this function.
- This function cannot be used with a control module that is not a normal spare part.
- To confirm the applied model, refer to the “model No. plate” affixed to the vehicle. The location of the model No. plate is shown in the Service Manual.

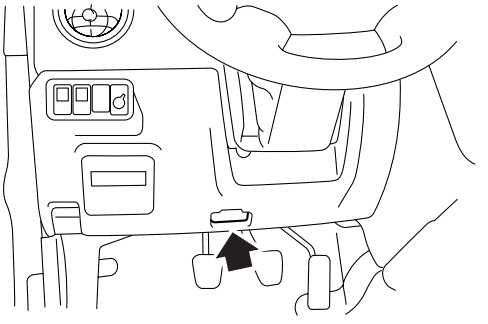


SMU-00868

Registration Procedure

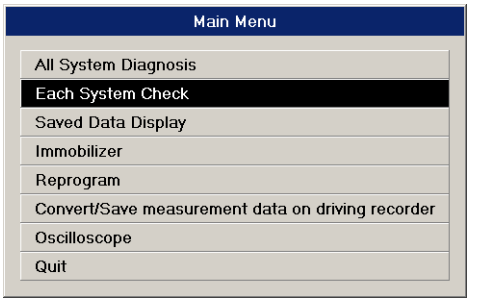
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWRLED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



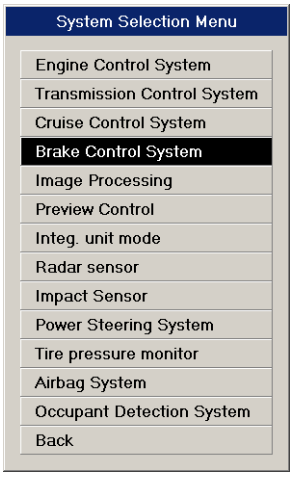
SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle’s ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



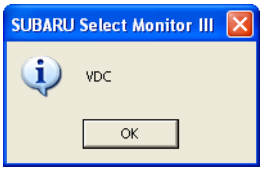
SMU-00600

7. On the System Selection Menu, select [Brake Control System] and then press the Enter key or left-click with the mouse.



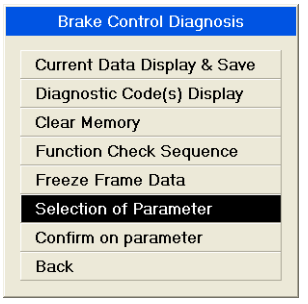
SMU-00669

8. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.



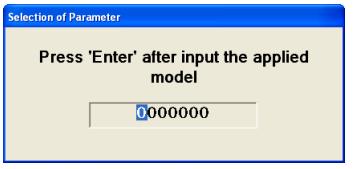
SMU-00869

9. From the list of fault diagnosis, select [Selection of Parameter] and then press the Enter key or left-click with the mouse.



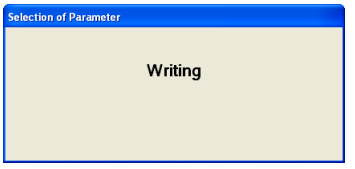
SMU-00870

10. Input the applied model and press the Enter key.



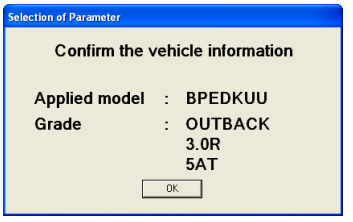
SMU-00871

11. Stand by as the message below will appear on the screen.



SMU-00872

12. The vehicle information check screen will be displayed.
Make sure that the applied model and grade shown on the screen are correct and then click the [OK] button.



SMU-00873

NOTE:
If the applied model and grade are different than those of the vehicle, execute the registration procedure again after clicking the [OK] button.

Confirm on Parameter

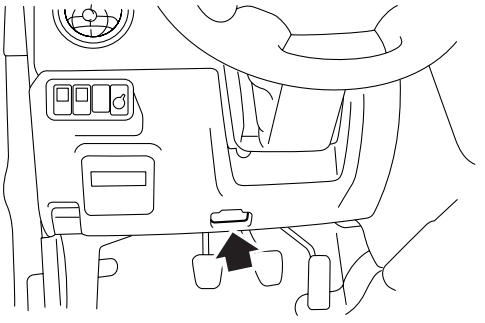
This function allows you to confirm the parameters registered in the VDC control module.

NOTE:
This function can be used even if the VDC control module is not a normal spare part.

Confirm Procedure

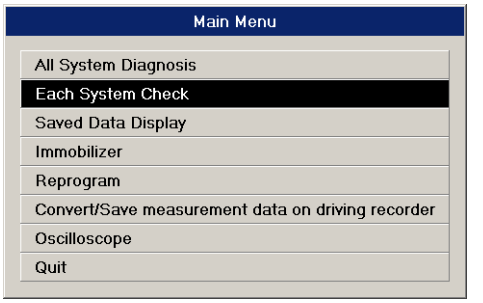
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWRLED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



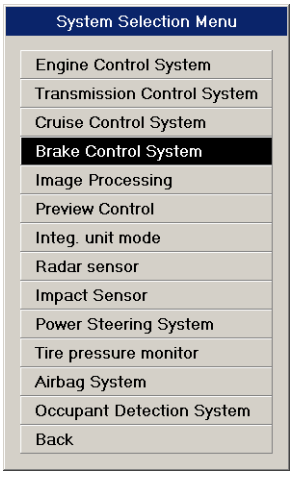
SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle's ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



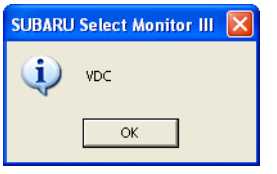
SMU-00600

7. On the System Selection Menu, select [Brake Control System] and then press the Enter key or left-click with the mouse.



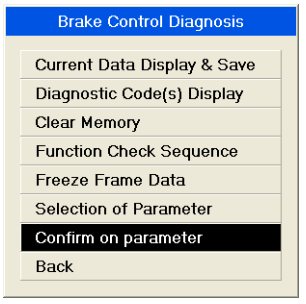
SMU-00669

8. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.



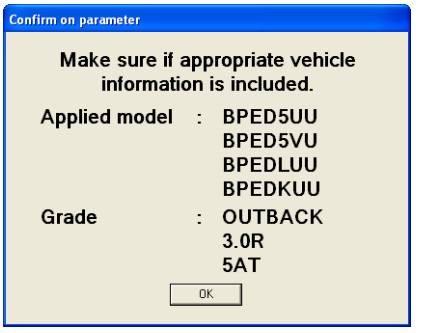
SMU-00869

9. From the list of fault diagnosis, select [Confirm on Parameter] and then press the Enter key or left-click with the mouse.



SMU-00874

10. The parameter confirm screen will be displayed. Make sure the “Applied model” and “Grade” of the pertinent vehicle are displayed, and then click the [OK] button.



SMU-00875

Body Integrated Module Destination Market Registry (Excluding North America and Japan)

When the body integrated module has been replaced by a normal spare part, the vehicle destination information is set to the body integrated module.

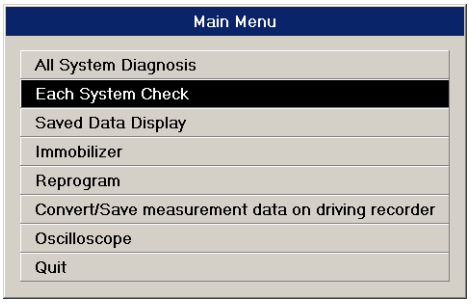
NOTE:

- Body integrated module destination registry is a function for markets other than North America and Japan.
- This function cannot be used with a control module that is not a normal spare part.
- Upon replacement of body integrated module, vehicle destination input is necessary. Please confirm market destination of the vehicle which the module replacement is to be performed, before the module is replaced by a spare part.

Confirmation of Vehicle Destination (Part 1)

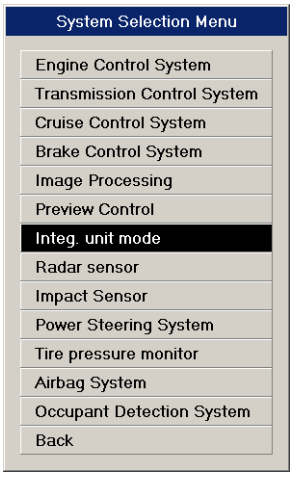
Confirm the vehicle destination registered in the body integrated module prior to replacement.

1. Start the PC application according to section "Starting Up the System" and display the Main Menu screen.
2. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



SMU-00600

3. On the System Selection Menu, select [Integ. unit mode] and then press the Enter key or left-click with the mouse.

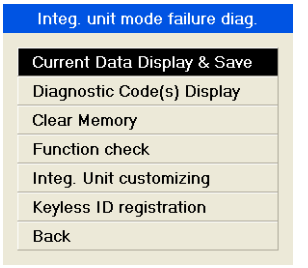


SMU-00672

4. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.

SMU-00380

5. From the list of fault diagnosis items, select [Current Data Display & Save] and then press the Enter key or left-click with the mouse.



SMU-01103

6. When digital data is displayed as shown below, scroll down and confirm the item [Destination Setting]. The value shown defines the market the vehicle is destined for.

Item	Value	Unit	Maximum
wiperdeicer	support		-
Sedan/Wagon Setting	Sedan		-
MT/AT Setting	AT		-
6MT Setting	Other than 6MT		-
Destination Setting	---		-
Factory initial setting	Market		-

SMU-01104

Confirmation of Vehicle Destination (Part 2)

If market destination is impossible to obtain digitally (e.g. when the body integrated module is out of order), refer to [Model Number Label] fixed onto the vehicle itself.
The location of the model number label is shown in the Service Manual.

For right-hand drive models

Confirm vehicle destination by “Applied Model” number row of the model number label, in which 5th out of 7 digits (count from left) distinguish the market vehicle is intended for.

Applied Model Number	5th Digit	Destination
* * * * K * *	K	EK, ER
* * * * 4 * * * * * * 5 * *	4 or 5	JP

SMU-01110

For left-hand drive models

Destination market is distinguished by whether the model number label is in Arabic or not.

Model Number Label	Destination
Arabic	KS

SMU-01106

Model Number Label	Destination
Non-Arabic	EC, EL, EA, EH, E2, EP, K4, K5

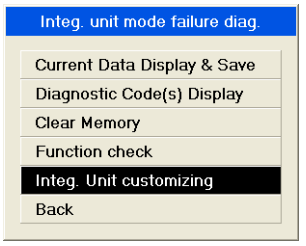
SMU-01105

Registration Steps for Registering Vehicle Destination

1. After the vehicle destination is confirmed, replace the body integrated module with a fresh spare.

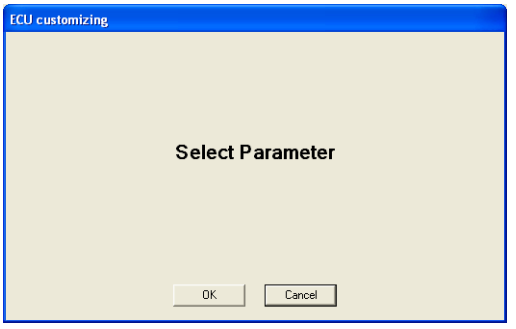
NOTE:
Please refer to Service Manual for instruction of body integrated module replacement.

2. Begin destination registry for the spare body integrated module.
   First, follow steps shown in column 1 through 4 of [Confirmation of vehicle destination (Part 1)] shown above.
3. From the list of fault diagnosis items, select [Integ. Unit customizing] and then press the Enter key or left-click with the mouse.



SMU-00674

4. The screen shown below will appear. Click the [OK] button.



SMU-01107

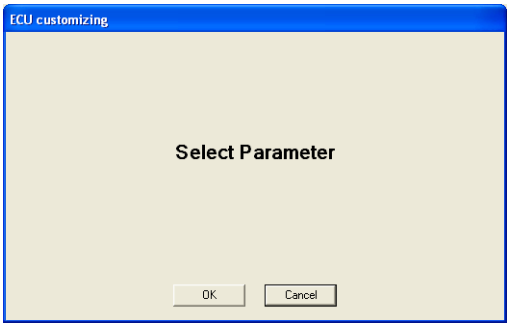
5. Option code registry screen will then be displayed. Refer to [Option Code Correlation Table] shown below, enter the option code matching the destination correlating to the result of steps shown above, and then click [OK].

SMU-01108

Option Code Correlation Table

Destination	Option Code
JPN	JP00
EK , ER	EK00
EC, EL, EA, EH, E2, EP, K4, K5	EC00
KS	KS00

6. Screen will then display message shown below. Reconfirm the displayed vehicle destination with the one identified by steps previously mentioned, then click [OK] to conclude the registry operation.



SMU-01109

NOTE:
If the applied model and grade are different than those of the vehicle, execute the registration procedure again after clicking the [Cancel] button.

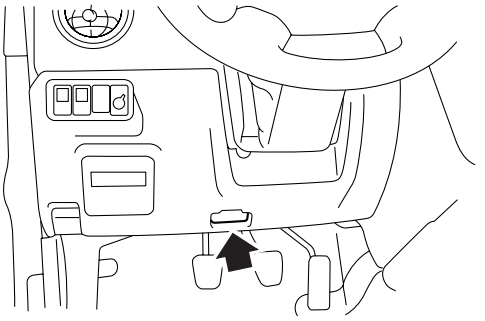
Body Integrated Module Function Check

The following procedure can be used to force operation of the various actuators that control the body integrated module and check their operation.

Getting Ready

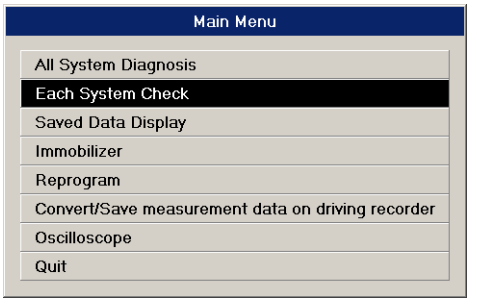
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



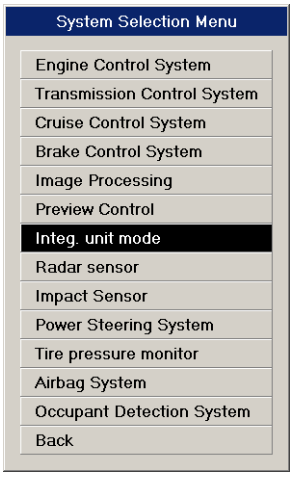
SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle's ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



SMU-00600

7. On the System Selection Menu, select [Integ. unit mode] and then press the Enter key or left-click with the mouse.

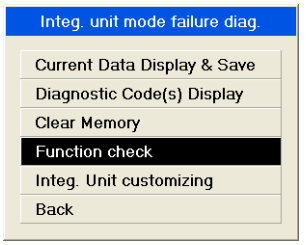


SMU-00672

8. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.

SMU-00380

9. From the list of fault diagnosis items, select [Function check] and then press the Enter key or left-click with the mouse.

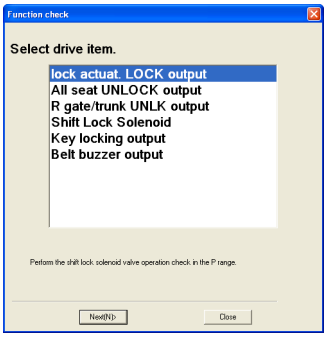


SMU-00673

On the screen that appears, select the actuator(s) to be checked, and then click the [Next] button.

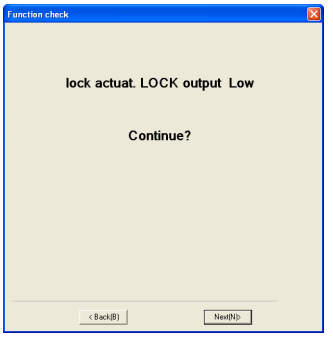
NOTE:

- A check mark will not appear next to an actuator when it is selected on the screen if the selected actuator is not equipped on the vehicle.
- Perform the shift lock solenoid operation check in the P range.



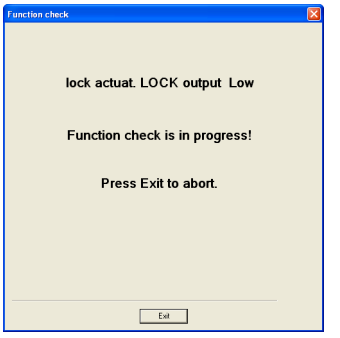
SMU-00520

This displays a screen for confirming operation of the selected actuator(s). Click the [Next] button.



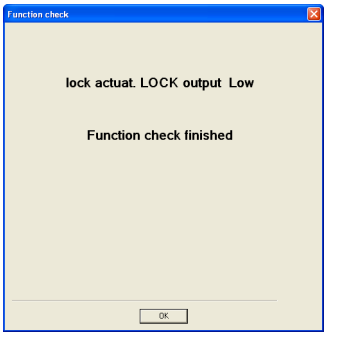
SMU-00383

This forces operation of the actuator(s). After checking the operational status of the actuator(s), click the [Exit] button.



SMU-00384

This causes a confirmation message to appear. Click the [OK] button.



SMU-00385

If the function check reveals abnormal operation in any actuator, perform repair work in accordance with the Service Manual.

Body Integrated Module Function Setting (Integ.Unit Customizing)

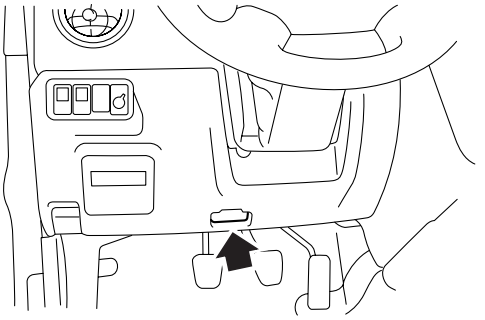
The following procedure can be used to configure operational details, operation time, and other settings for the actuators controlled by the body integrated module.

IMPORTANT:
Make sure you perform setting operations in accordance with the Service Manual when using the unit customization function. Configuring the wrong settings can cause abnormal system operation and other problems.

Getting Ready

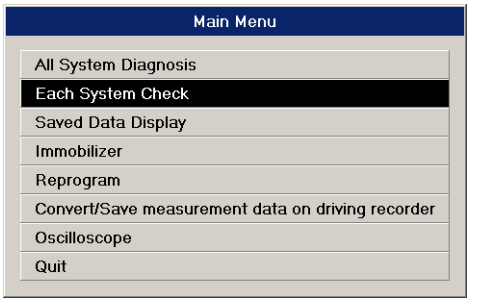
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



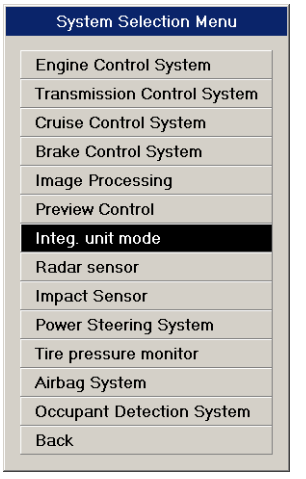
SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle's ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



SMU-00600

7. On the System Selection Menu, select [Integ. unit mode] and then press the Enter key or left-click with the mouse.

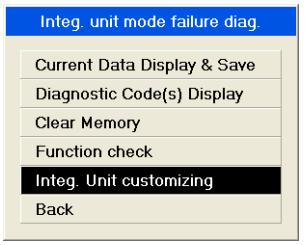


SMU-00672

8. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.

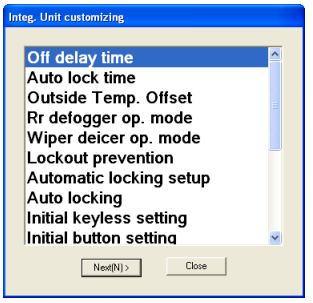
SMU-00380

9. From the list of fault diagnosis items, select [Integ.Unit customizing] and then press the Enter key or left-click with the mouse.



SMU-00674

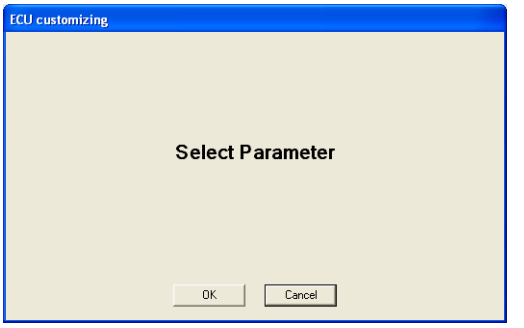
On the screen that appears, select the setting(s) to be configured, and then click the [Next] button.



SMU-00391

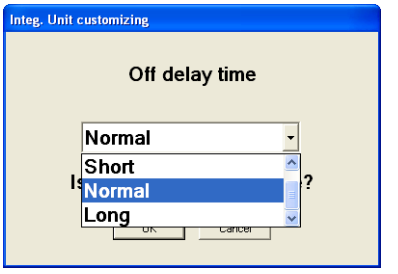
NOTE:

- Make sure you perform setting operations in accordance with the Service Manual. Configuring the wrong settings can cause abnormal system operation and other problems.
- If there is no destination registry in the body integrated module, the screen may display message shown below.
  In such case, please refer to item [Body Integrated Module Destination Market Registry (Excluding Japan and North America)], and perform destination registry.



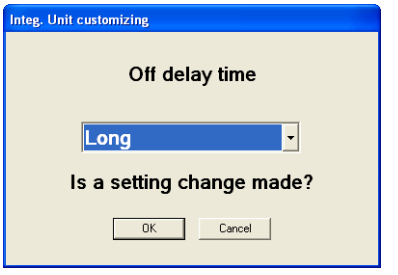
SMU-01107

This displays a customized setting screen for the selected item(s). Select the desired setting(s), and then click the [OK] button.



SMU-00408

This causes a message to appear indicating that setting configuration is complete. Click the [OK] button.



SMU-00415

Display the List of Function Setting (Integ.Unit Customizing)

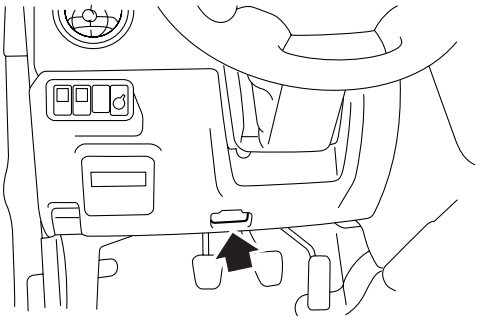
You can display, print, or save a list of Function Setting (Integ.Unit Customizing) status for body integrated module.
On the list, you can enter information, such as “Vehicle Registration Number”, “Vehicle Number”, etc.

NOTE:
The customized setting cannot be changed from this function. To change customized setting, perform from “Integ.Unit customizing”.

How to Display the List

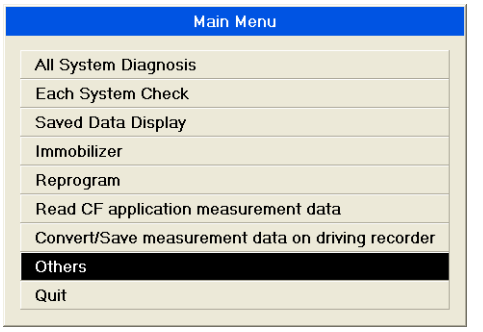
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



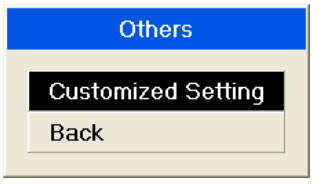
SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle's ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [Others] and then press the Enter key or left-click with the mouse.



SMU-00856

7. On the Others Menu, select [Customized Setting] and then press the Enter key or left-click with the mouse.

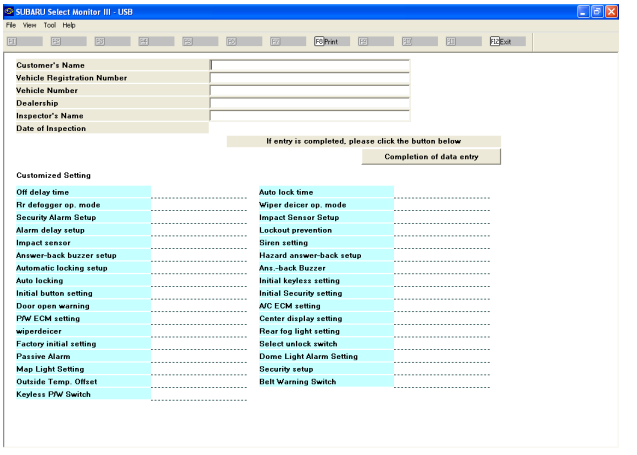


SMU-00857

8. This displays the list of Function Setting status for body integrated module.

   Enter information into the items; Customer's Name / Vehicle Registration Number / Vehicle Number / Dealership / Inspector’s Name.

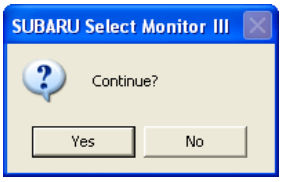
   Confirm the entered items and then click the [Completion of data entry] button.



SMU-00878

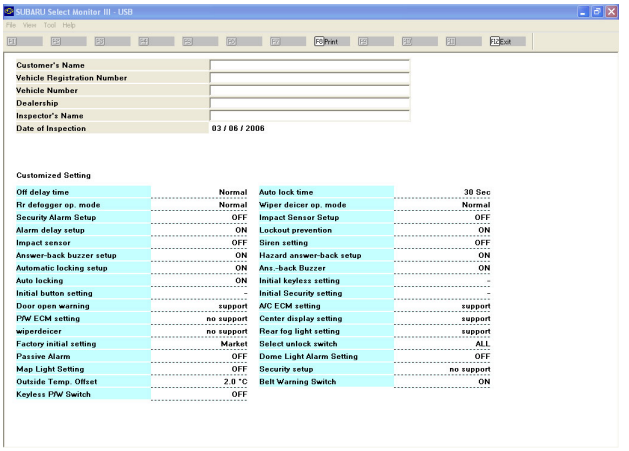
NOTE:
The items displayed in the list depend on vehicle model and specifications.

9. This displays a confirmation dialog box for the function setting status. Click the [Yes] button.



SMU-00859

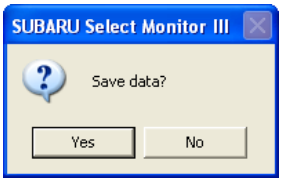
10. After completing confirmation of function setting status, data will be input in blanks. This also displays a save confirmation dialog box simultaneously.



SMU-00879

NOTE:
"-" may be displayed in the case of certain vehicle models and vehicle specifications.

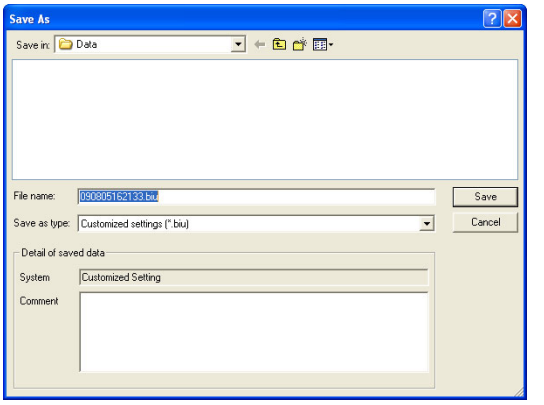
11. To save displayed data, click the [Yes] button in the save confirmation dialog box.



SMU-00861

12. This displays the "Save As" dialog box.

The name of the data file being saved is generated automatically in accordance with the current time and date. If you want to use the generated file name as-is, click the dialog box [Save] button. If you want to change to a different file name, type in the name you want.

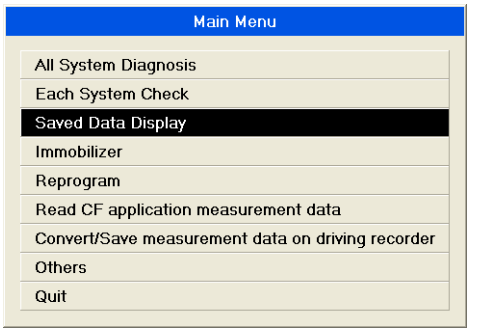


SMU-00862

NOTE:
- The function setting status file is saved in the Data folder where the PC application is installed. To change to another storage location, specify the location you want in the Save in box of the save data dialog box.
- The Comment box of the Save As dialog box can be used to save general comments associated with the data or file.

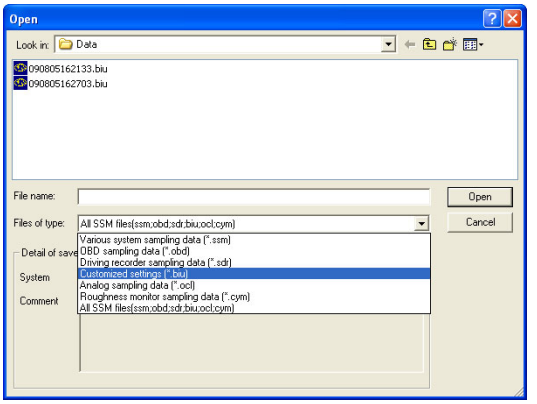
Displaying Saved Files

1. On the Main Menu, select [Saved Data Display] and then click with the mouse.



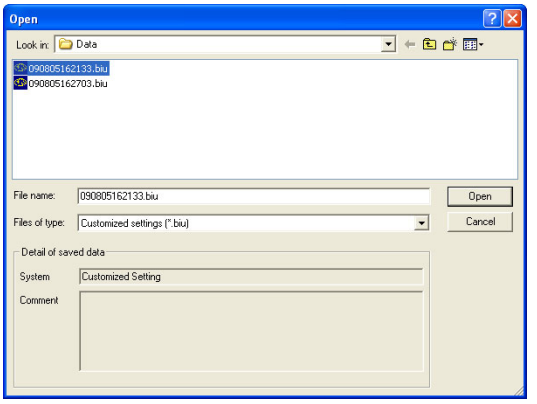
SMU-00863

2. This displays the “Open” dialog box. Click “Files of type” and select {Customized settings (*.biu)}.



SMU-00864

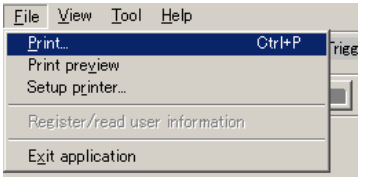
3. After selecting the desired file, clicking the [Open] button allows to open saved file.



SMU-00865

Printing the Data

Click the [File] menu and then select [Print]. You can also print by clicking the icon on the Data List Toolbar, by clicking the F8 Print button on the Function Key Bar, or by pressing the F8 function key on the PC keyboard.



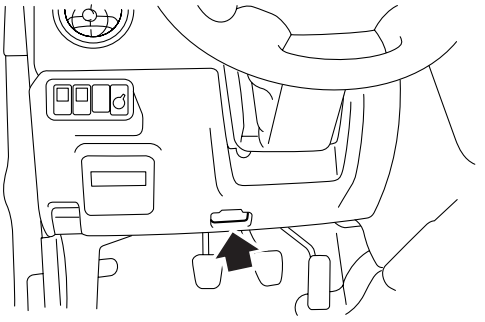
SMU-00666

Impact Sensor

Impact Sensor sensitivity adjustment on the security system can be done by this function.
It is necessary to refer to service manuals when you do this adjustment.

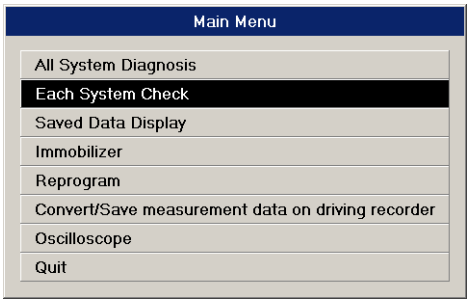
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



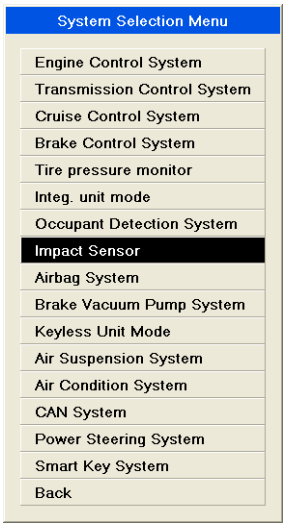
SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle's ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



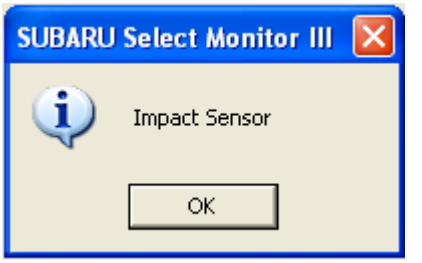
SMU-00600

7. On the System Selection Menu, select [Impact Sensor] and then press the Enter key or left-click with the mouse.



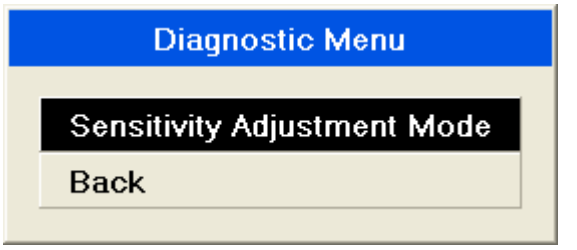
SMU-01024

8. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.



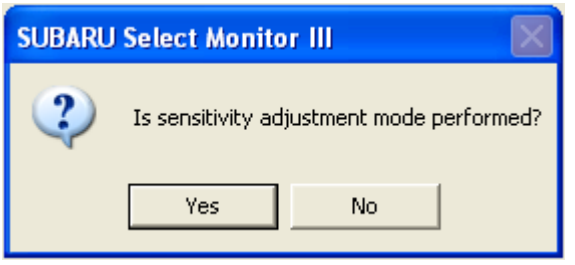
SMU-01025

9. On the Diagnostic Menu, select [Sensitivity Adjustment Mode] and then press the Enter key or left-click with the mouse.



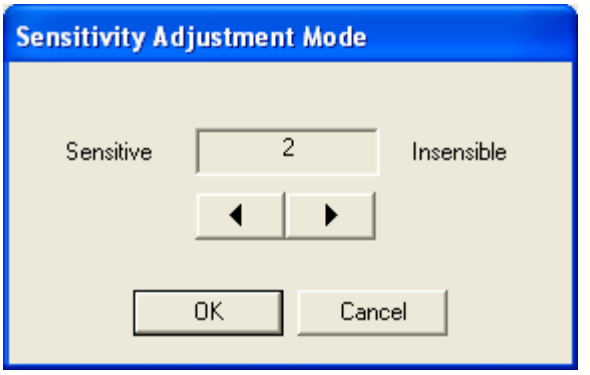
SMU-01026

*10.*This displays an execution confirmation message of the Sensitivity Adjustment Mode. Click the [Yes] button.



SMU-01027

*11.*Sensitivity Adjustment Mode dialog box appears. Select a sensitivity value of the Impact Sensor by clicking button and then click the [OK] button. It can be selected by pressing left and right arrow keys on the PC, too.

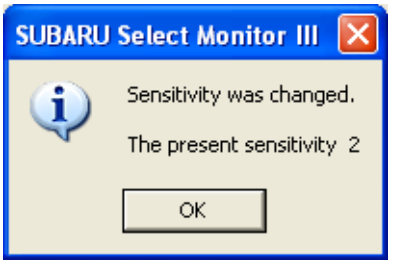


SMU-01028

NOTE:

- The bigger the value of the sensitivity, the lower the Impact Sensor sensitivity is.
- If the sensitivity adjustment could not be done normally, a buzzer sounds 4 times.

*12.*Sensitivity adjustment confirmation message appears. Click the [OK] button.



SMU-01029

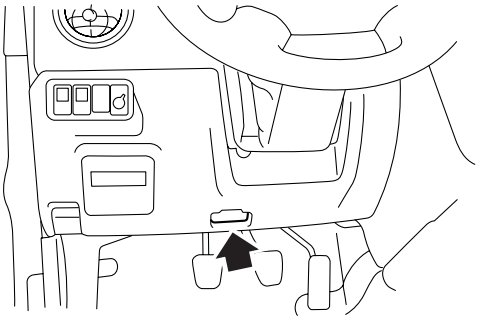
Registering the Transmitter

This allows to register the transmitter of keyless system.

NOTE:
- A maximum of four transmitters can be registered for each individual vehicle.
- When replacing or adding the transmitter, you need to register the previously registered transmitter again.
- Make sure to refer to the service manual when registering a transmitter.

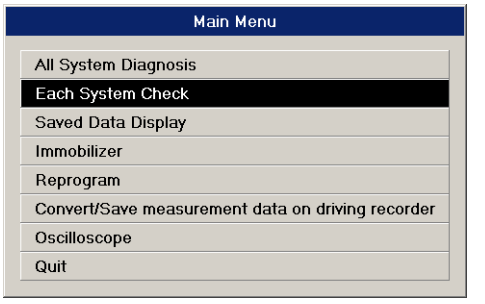
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



SMU-00113

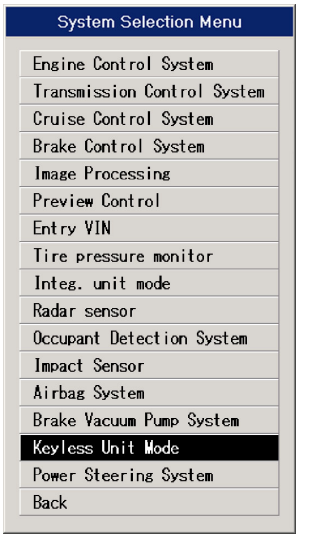
3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle's ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



SMU-00600

7. On the System Selection Menu, select [Keyless Unit Mode] and then press the Enter key or left-click with the mouse.

NOTE:
For model with body integrated module, select [Keyless ID registration] from [Integ. Unit Mode].

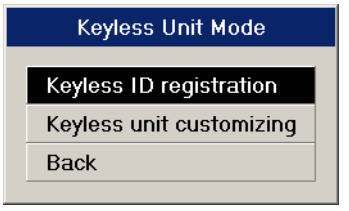


SMU-00761

8. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.

SMU-00762

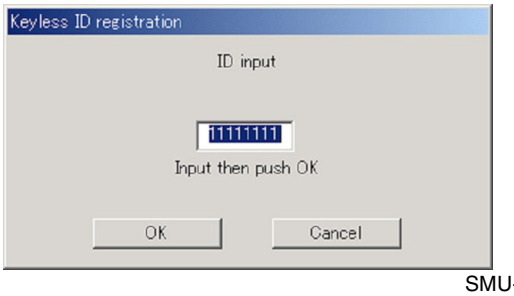
9. From the list of keyless diagnosis items, select [Keyless ID registration] and then press the Enter key or left-click with the mouse.



SMU-00763

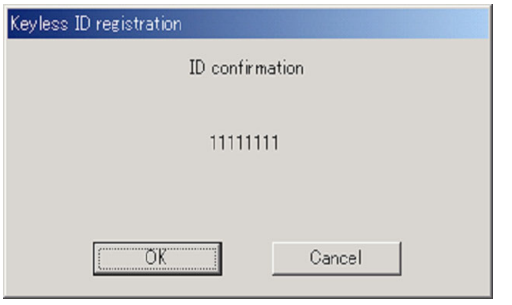
10. This displays Keyless ID Input screen. Input the ID and then click the [OK] button.

NOTE:
The keyless ID, eight-digit number, is attached to vinyl bag, which contains transmitter, or circuit board inside transmitter.



SMU-00764

11. This displays confirmation screen of Keyless ID which is input. Make sure that the ID displayed on screen is correct and then click the [OK] button.



SMU-00765

12. Stand by as the keyless ID is registered.

13. The screen shown below will appear if registration ends normally.

If you have another transmitter to be registered, click the [OK] button. If you do not have any more transmitters to be registered, click the [Cancel] button and advance to step 15.

SMU-00766

14. If you need to register other transmitter, repeat steps 10 through 13.

15. After completing registration of transmitter, make sure that the transmitter is operating normally, and then quit the registration operation.

NOTE:
If an error is occurred during keyless ID registration, refer to the service manual and follow the instructions that appear on the screen to correct the problem.

Keyless Entry Control Module Function Setting (Keyless unit Customizing)

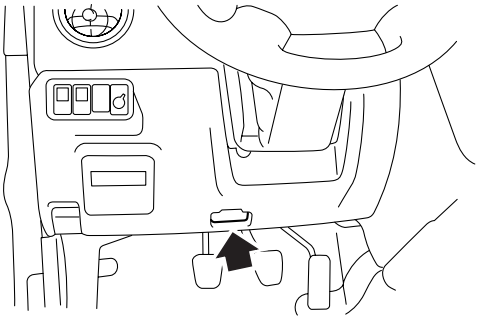
The following procedure can be used to configure operational details, operation time, and other settings for the actuators controlled by the keyless control module.

IMPORTANT:
Make sure you perform setting operations in accordance with the Service Manual when using the unit customization function. Configuring the wrong settings can cause abnormal system operation and other problems.

NOTE:
For model with body integrated module, this customizing can be performed in “Body Integrated Module Function Setting (Integ.Unit Customizing)”.

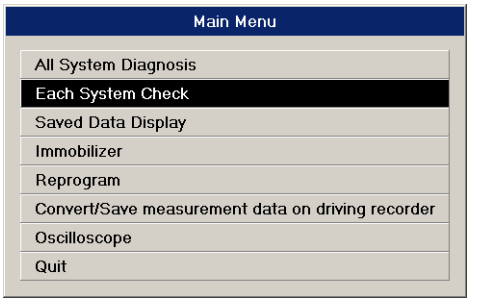
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle’s ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



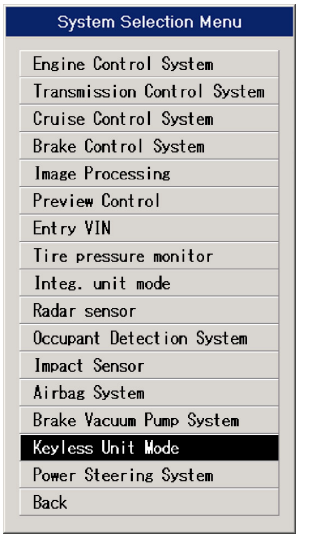
SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle’s ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



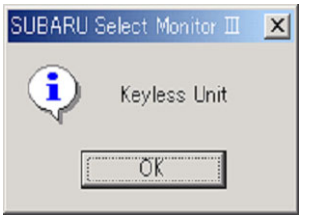
SMU-00600

7. On the System Selection Menu, select [Keyless Unit Mode] and then press the Enter key or left-click with the mouse.



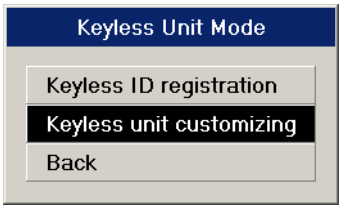
SMU-00761

8. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.



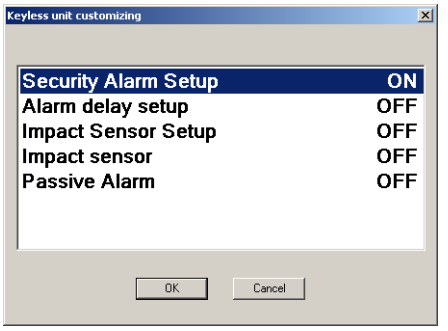
SMU-00762

9. From the list of keyless diagnosis items, select [Keyless unit customizing] and then press the Enter key or left-click with the mouse.



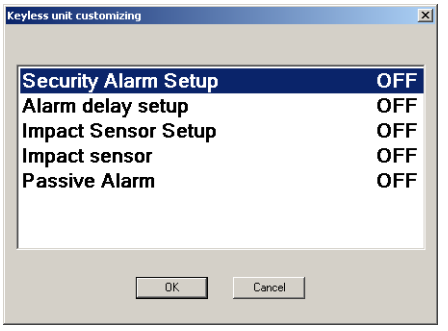
SMU-00767

10. This displays a customized setting screen. Click the desired setting item with mouse or select it with up or down arrow key on the PC keyboard.



SMU-00768

11. After selecting item, change the setting by double-click with mouse or left or right arrow key on the PC keyboard, and then click the [OK] button.



SMU-00769

Registering the Tire Pressure Monitoring System Transmitter (ID)

The procedure below can be used to register the tire pressure monitoring system transmitter (ID). Registration of the transmitter (ID) is required after performing any one of the following repair work procedures.

- Transmitter replacement
- Tire rotation (causing change of transmitter position)
- Tire pressure monitoring control module replacement

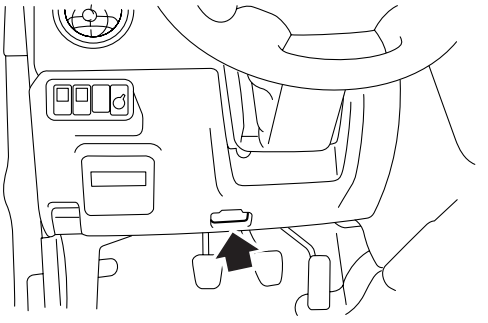
NOTE:
Be sure to perform transmitter (ID) registration work in accordance with the Service Manual.

Getting Ready

Adjust the air pressure of all of the tires so they are at the standard value.

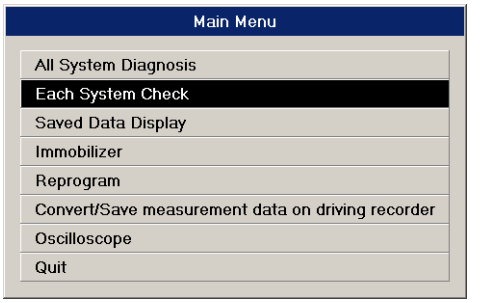
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



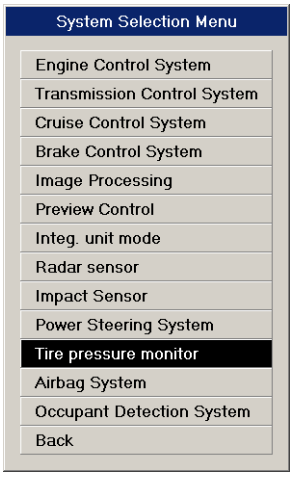
SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle's ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



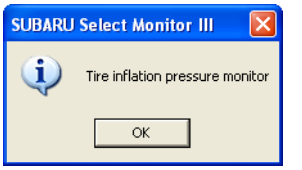
SMU-00600

7. On the System Selection Menu, select [Tire pressure monitor] and then press the Enter key or left-click with the mouse.



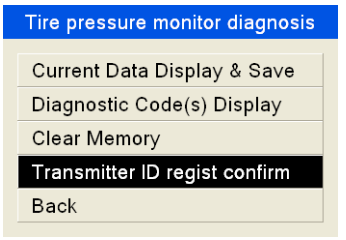
SMU-00675

8. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.



SMU-00395

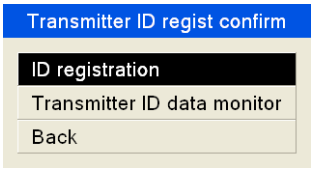
9. On the Tire pressure monitor diagnosis screen, select [Transmitter ID regist confirm] and then press the Enter key or left-click with the mouse.



SMU-00396

ID registration

1. On the Transmitter ID regist confirm screen, select [ID registration] and then press the Enter key or left-click with the mouse.



SMU-00397

2. This displays a confirmation screen asking if you want to delete the registered transmitter ID. Click the [OK] button.

SMU-00398

3. On the transmitter ID registration confirmation screen, click the [OK] button to start ID registration.

SMU-00399

The message “complete” appears when each wheel ID registration is complete.

SMU-01126

The dialog box shown below appears when ID registration for all wheels is complete.

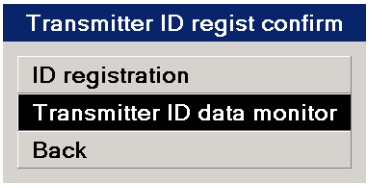
Click the [OK] button to exit the operation.

SMU-00401

NOTE:
Registering a transmitter ID causes the previously registered ID to be deleted.

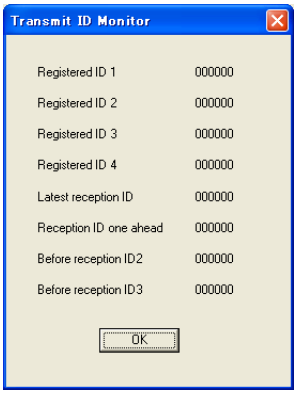
Transmitter ID Data Monitor

The currently registered ID data and the ID data sent from the transmitter to the tire pressure monitoring control module can be viewed by selecting [Transmitter ID data monitor] on the Transmitter ID regist confirm screen.



SMU-00402

Transmitter ID Data Screen



SMU-01127

Calibrating the Occupant Detection System

The procedure below can be used to calibrate the occupant detection system after performing repair work on the system.

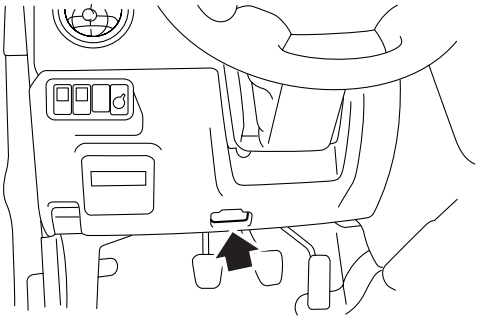
NOTE:
- Perform occupant detection system calibration work in accordance with the Service Manual.
- The air bag warning lamp will light if some abnormality occurs, such as interruption of the adjustment procedure or interruption of the sensor data read procedure.

Getting Ready

Prepare the vehicle for calibration as instructed by the Service Manual.

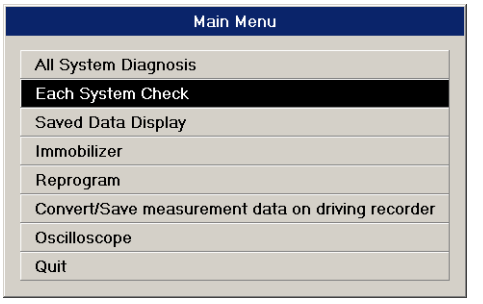
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



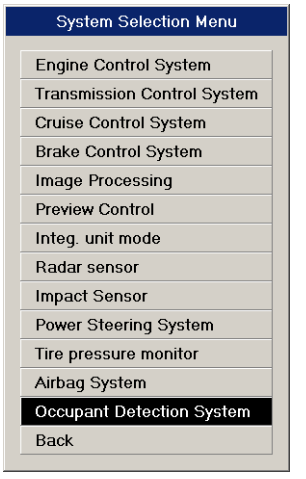
SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle's ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



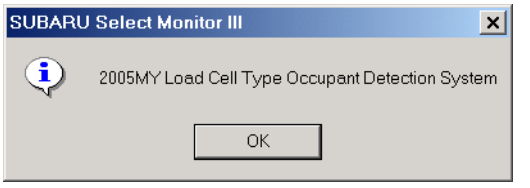
SMU-00600

7. On the System Selection Menu, select [Occupant Detection System] and then press the Enter key or left-click with the mouse.



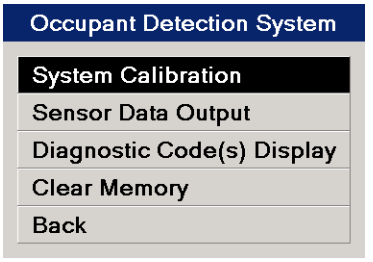
SMU-00679

8. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.



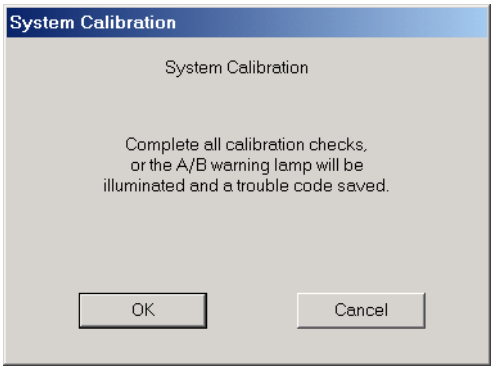
SMU-00358

9. On the Occupant Detection System screen, select [System Calibration] and then press the Enter key or left-click with the mouse.



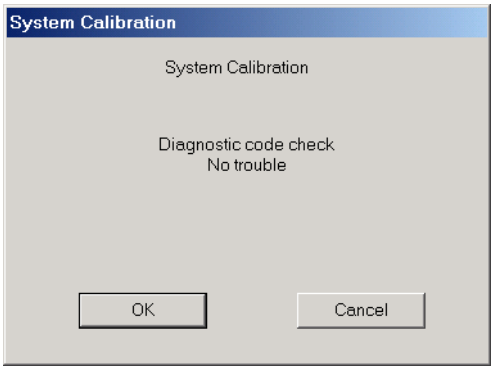
SMU-00359

After confirming the contents of the screen shown below, click the [OK] button.



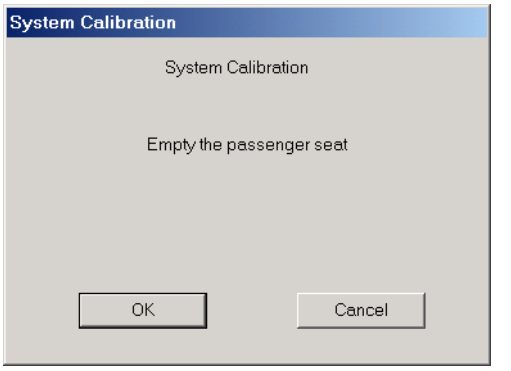
SMU-00360

When a screen appears confirming that there are no fault codes, click the [OK] button.



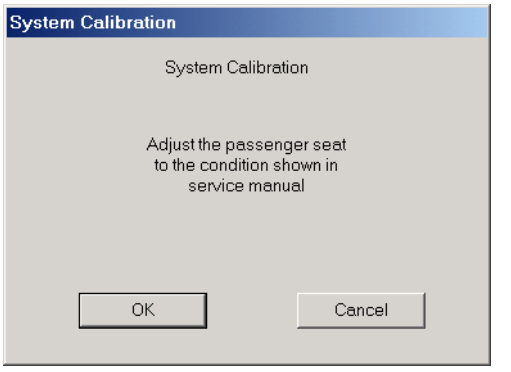
SMU-00361

After making sure the front passenger seat is vacant, click the [OK] button.



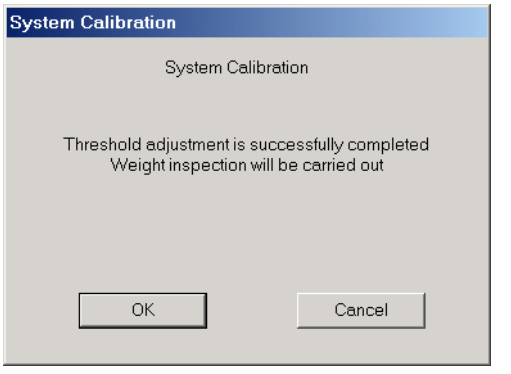
SMU-00362

After making sure the front passenger seat is in the condition specified by the Service Manual, click the [OK] button.



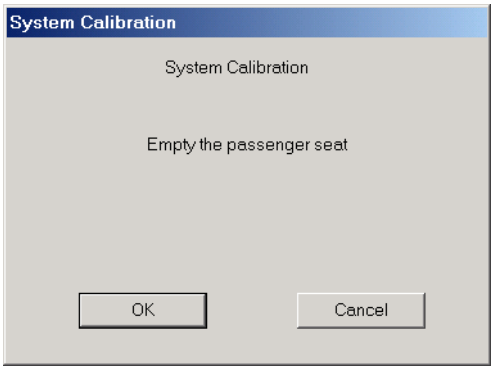
SMU-00363

A load test confirmation screen appears after threshold adjustment ends normally. Click the [OK] button.



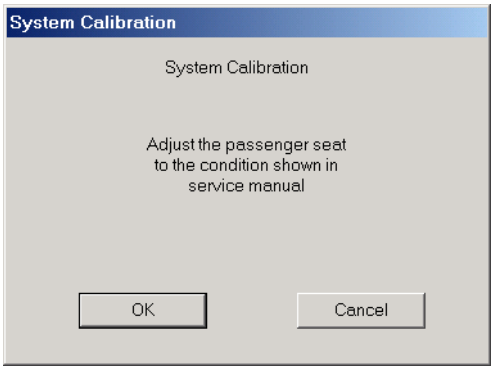
SMU-00364

After making sure the front passenger seat is vacant, click the [OK] button.



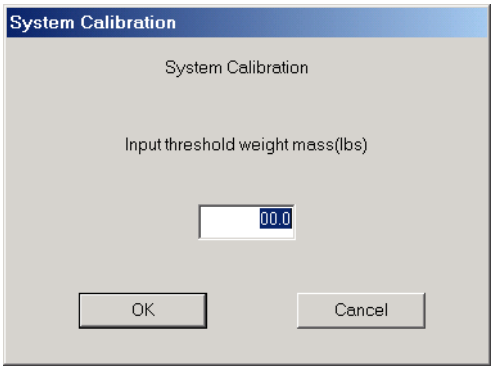
SMU-00365

After making sure the front passenger seat is in the condition specified by the Service Manual, click the [OK] button.



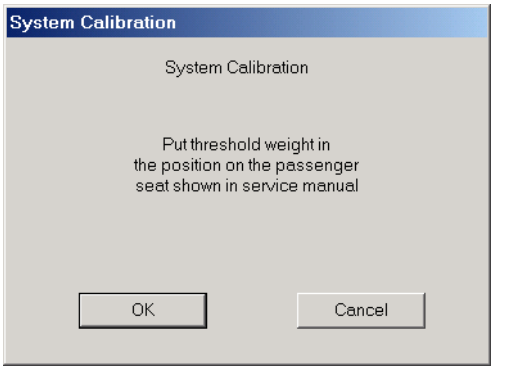
SMU-00366

Input the weight value, and then click the [OK] button.



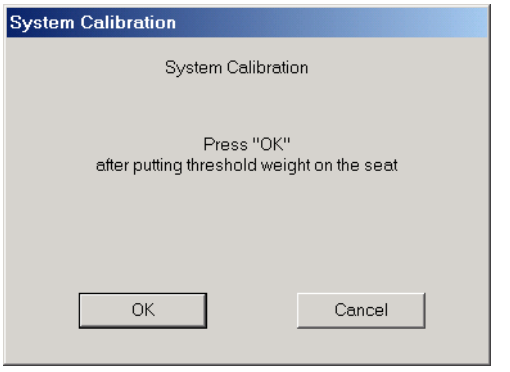
SMU-00367

After confirming that the weight on the front passenger seat is positioned as specified in the Service Manual, click the [OK] button.



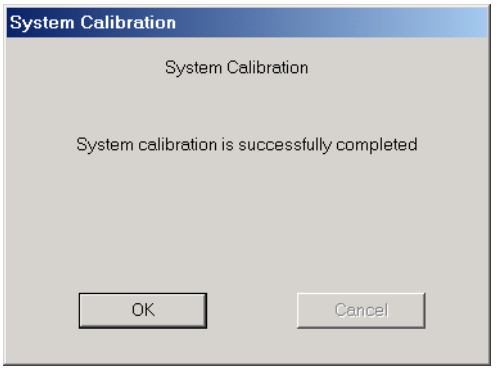
SMU-00368

After confirming that special tool Weight A and Weight B are combined and positioned on the front passenger seat as specified in the Service Manual, click the [OK] button.



SMU-00369

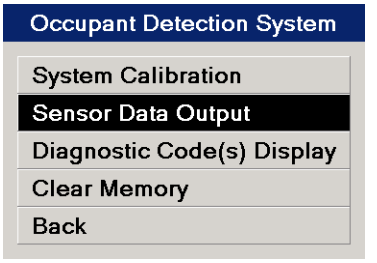
After confirming that system adjustment has ended normally, click the [OK] button to exit the operation.



SMU-00370

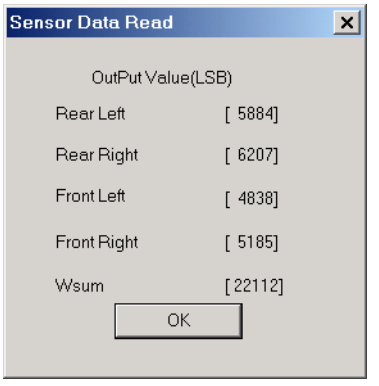
Reading Sensor Data

Data from each sensor can be viewed by selecting [Sensor Data Output] on the Occupant Detection System screen.



SMU-00371

Sensor Data Output Screen



SMU-00372

Airbag System

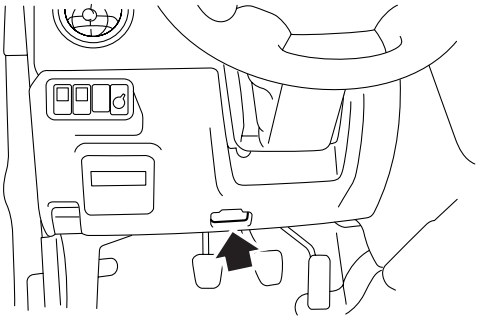
This function can be used to check the operational status of each sensor when abnormality of seat belt buckle switch and seat position sensor occurs, or after replacing the seat belt buckle switch and the seat position sensor.

NOTE:
Status data screen will appear in North American models only.

Getting Ready

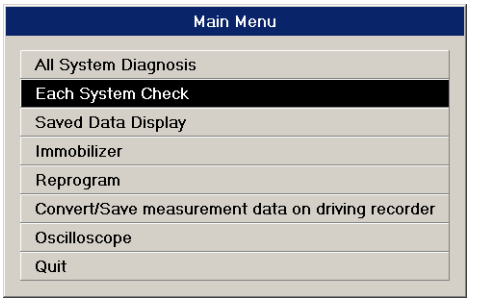
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



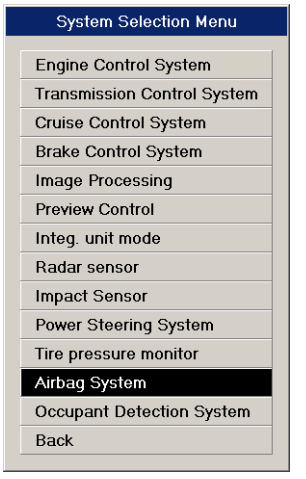
SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle's ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



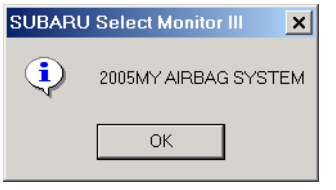
SMU-00600

7. On the System Selection Menu, select [Airbag System] and then press the Enter key or left-click with the mouse.



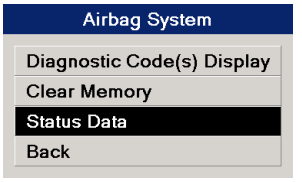
SMU-00682

8. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.



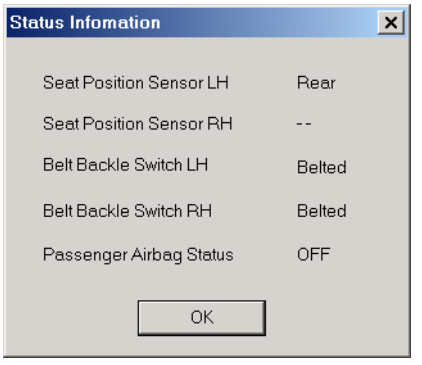
SMU-00374

9. On the Airbag System screen, select [Status Data] and then press the Enter key or left-click with the mouse.



SMU-00375

After checking the status of each sensor, click the [OK] button.



SMU-00376

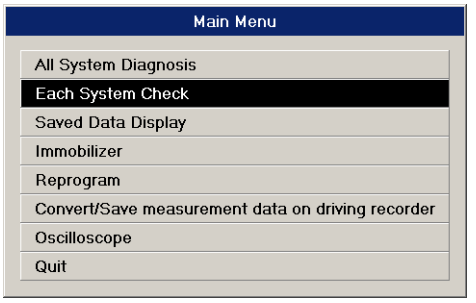
CAN System Fault Location

When there is some trouble in the CAN system, the location of this trouble can be confirmed.

NOTE:

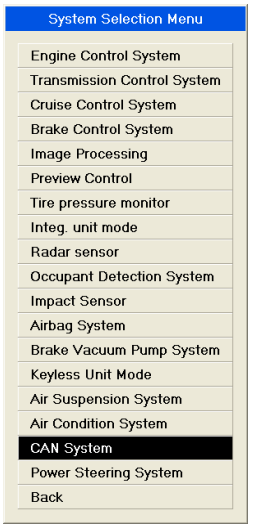
- This function corresponds only to troubles memorized DTC. In case of troubles not memorized DTC, their locations are not displayed.
- The DTC displayed by the “Diagnostic Code Display” of the CAN system are only the codes related to the CAN system out of the group of DTCs displayed by “Diagnostic Code Display” of the Body Integrated Module. Accordingly, the DTC displayed by the CAN system also can be confirmed from the Body Integrated Module.

1. Start the PC application according to section “Starting Up the System” and display the Main Menu screen.
2. On the Main Menu that appears on the display,select [Each System Check] and then press the Enter key or left-click with the mouse.



SMU-00600

3. On the System Selection Menu, select [CAN System] and then press the Enter key or left-click with the mouse.

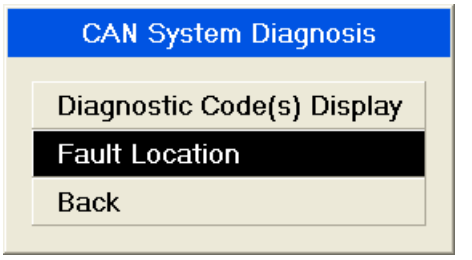


SMU-00892

4. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.

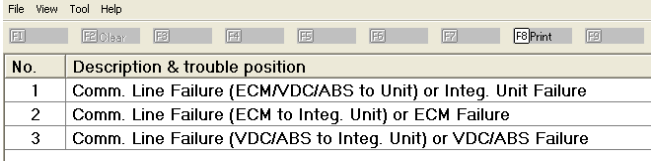
SMU-00893

5. From the list of fault diagnosis items, select [Fault Location] and then press the Enter key or left-click with the mouse.



SMU-00894

6. The fault location is displayed.



No.	Description & trouble position
1	Comm. Line Failure (ECM/VDC/ABS to Unit) or Integ. Unit Failure
2	Comm. Line Failure (ECM to Integ. Unit) or ECM Failure
3	Comm. Line Failure (VDC/ABS to Integ. Unit) or VDC/ABS Failure

SMU-00895

Registering the Immobilizer (Not Equipped with Keyless Access with Push Button Start System)

WARNING:

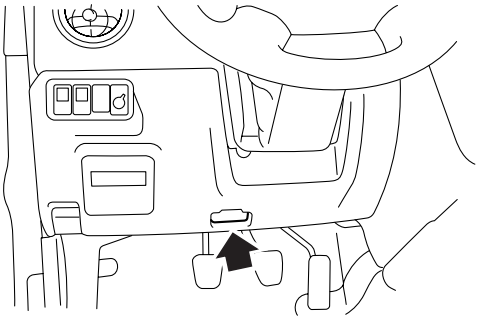
- The security ID and registration command must be handled as confidential information and shall not be announced to outsiders.
- When wireless radios or car telephones are installed, they must be installed so that the immobilizer system is not influenced by electric waves.
- Do not operate cell phones or wireless radios or the like when either trouble diagnosis or immobilizer registration is in progress.
- During immobilizer registration, do not bring a key with a different ID close to the ignition switch. When the key is on a keychain, remove it from the chain before start of diagnosis. When there are several keys on one keychain, remove them from the keychain and use them individually for the work.
- When the engine cannot be started with a registered key, pull the ignition key from the ignition switch, wait approximately one second until the immobilizer warning lamp starts flashing, and then turn the ignition key slowly to start the engine.

Getting Ready

1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

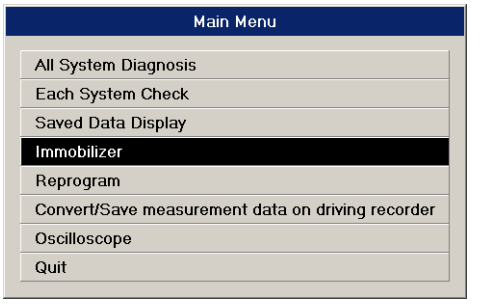
NOTE:

SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



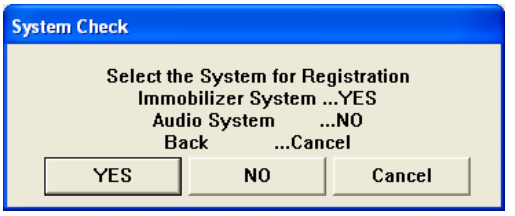
SMU-00113

3. Connect the SDI to the PC with the USB cable.
4. Turn on the vehicle's ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the PC application.
6. On the Main Menu that appears on the display, select [Immobilizer] and then press the Enter key or left-click with the mouse.



SMU-00663

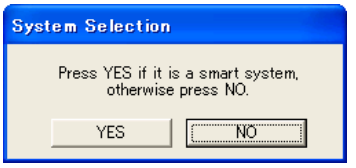
7. Click the [YES] button if the system selection screen is displayed.



SMU-00946

NOTE:
Audio System is the specification only for the U.K.

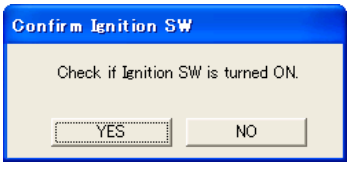
8. On the next screen, confirm the system is keyless access with push button start system. Click the [NO] button.



SMU-00908

NOTE:
- The term [smart system] that appears on this screen is synonymous with the term [keyless access with push button start system] used in this text.
- The keyless access with push button start system is not equipped with some vehicles, depending on the specifications, for North America, Australia, and some other areas.

9. Click [YES] after confirming if the ignition switch is ON, as following screen will be displayed.

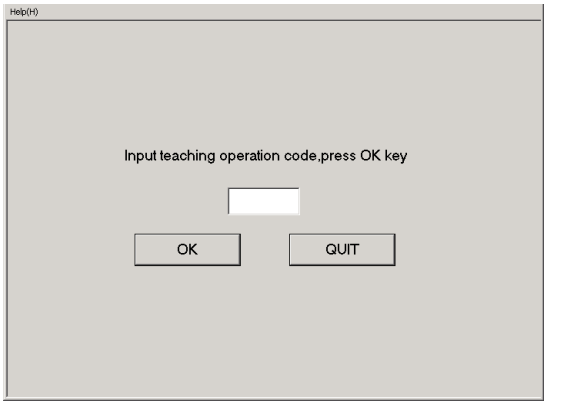


SMU-00909

10. In response to the compliance verification dialog box that appears, click the [OK] button.

SMU-00876

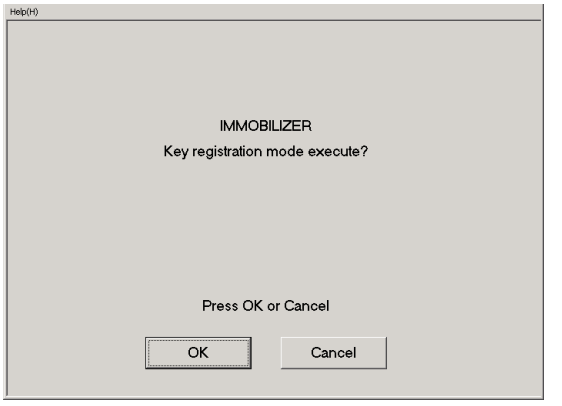
11. Input the teaching operation code, and then click the [OK] button.



SMU-00431

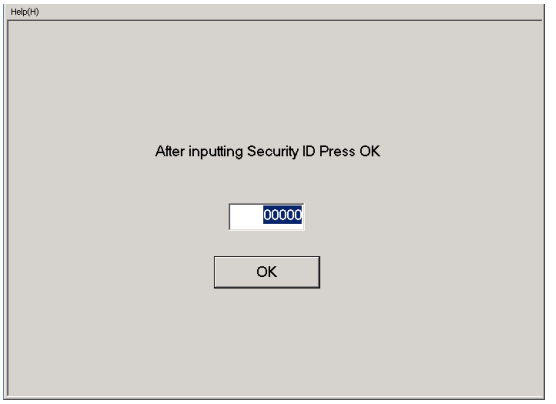
NOTE:
When you wish to return to the Main Menu screen, click the [QUIT] button.

12. On the registration mode confirmation dialog box that appears, click the [OK] button.



SMU-00432

*13.*Input the security ID and then click the [OK] button.

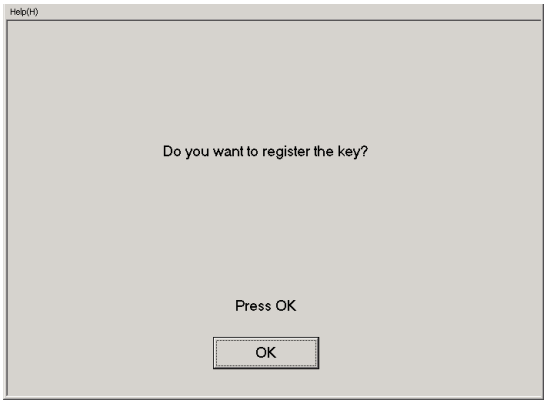


SMU-00732

*14.*Stand by as the security ID is being collated.

SMU-00434

*15.*In response to the key registration confirmation screen dialog box that appears, click the [OK] button.



SMU-00439

*16.*Stand by as the key is registered.

SMU-00435

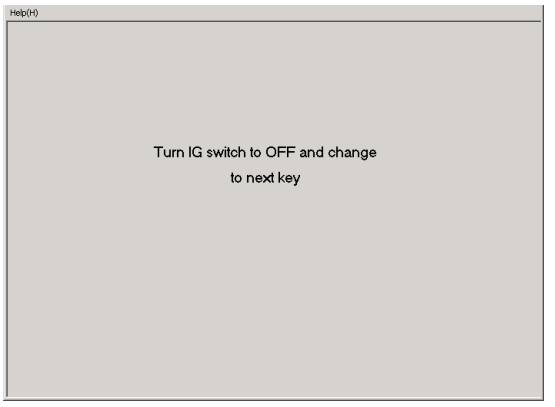
*17.*The screen shown below will appear if registration ends normally.

If you have another key to be registered, click the [OK] button. If you do not have any more keys to be registered, click the [Cancel] button and advance to step 26.

SMU-00436

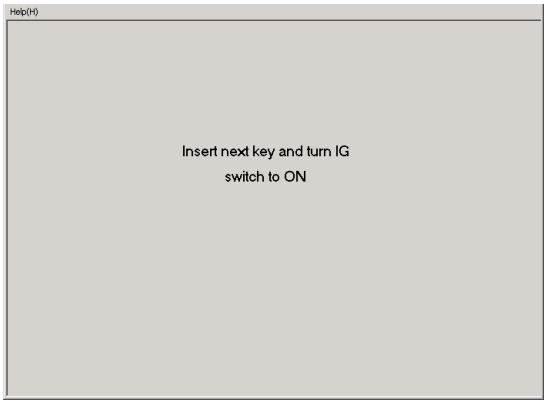
*18.*Turn off the ignition switch, and then change the key to one to be registered.

NOTE:
You need to change key within about 30 seconds.



SMU-00437

*19.*Turn off the ignition switch and the screen shown below will appear. Insert the key you want to register into the key cylinder, and turn on the ignition switch.

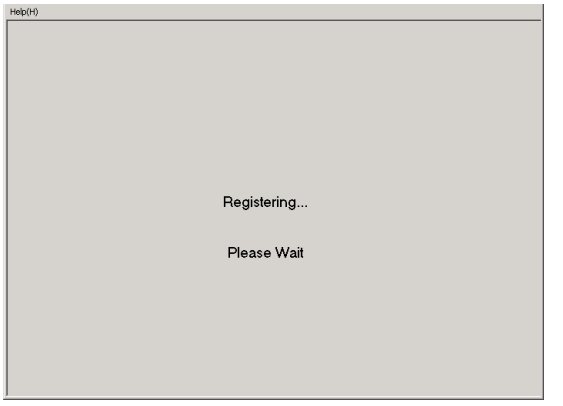


SMU-00438

*20.*In response to the key registration confirmation screen dialog box that appears, click the [OK] button.

SMU-00439

*21.*Stand by as the key is registered.



SMU-00435

*22.*The screen shown below will appear if registration ends normally.

If you have another key to be registered, click the [OK] button. If you do not have any more keys to be registered, click the [Cancel] button and advance to step 26.

SMU-00440

*23.*Repeat steps 18 through 21.

*24.*The screen shown below will appear if registration ends normally.

If you have another key to be registered, click the [OK] button. If you do not have any more keys to be registered, click the [Cancel] button and advance to step 26.

SMU-00441

*25.*Repeat steps 18 through 21.

*26.*The screen shown below will appear if registration ends normally.
Click the [OK] button.

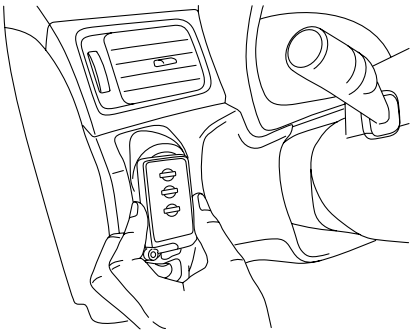
SMU-00733

*27.*After confirming that the immobilizer system is operating normally, quit the registration operation.

Registering the Immobilizer (Equipped with the Keyless Access with Push Button Start System)

WARNING:

- The security ID and registration command must be handled as confidential information and shall not be announced to outsiders.
- When you install wireless radios or car phones, make sure that mobile keys (access keys) are not influenced by their electric waves.
- Do not operate cell phones or wireless radios or the like when either trouble diagnosis or mobile key (access key) registration is in progress.
- The work of "Registering the Smart Immobilizer", "Registering the Smart ECM" and "Delete the Mobile Key (AccessKey) ID" includes the operation of holding up the mobile key (AccessKey) to the push engine switch (push-button ignition switch). Pay attention to the following when performing this operation.
  1) Confirm that the battery voltage is 11 V or more and execute each mode.
  2) When confirm/register mobile key (access key), only one key can be brought into vehicle at a time.
     For registration of multiple keys, bring a key into vehicle and perform registration while leaving rest of other keys outside.
  3) When holding up the mobile key (AccessKey) to the push engine switch (push-button ignition switch), do not hold two or more mobile keys (AccessKey) at the same time, but use only one each time. (When the mobile key (AccessKey) is on a keychain, remove it from the keychain before the work.)
  4) When holding the mobile key (AccessKey) up to the push engine switch (push-button ignition switch), bring the mobile key (AccessKey) close to the push engine switch (push-button ignition switch) as shown below.



SMU-01094

  (1) Let the mechanical key insertion opening of the mobile key (AccessKey) face down.
  (2) Hold the Subaru ornament side to the push engine switch (push-button ignition switch) side.
  (3) Bring it close until it touches the push engine switch (push-button ignition switch).

  When replacing the parts for vehicles with keyless access with push button start system, always use new parts for "mobile key (AccessKey)", "collation ECM", "ID code box", "steering lock ECM", and "body integrated module", and never replace by used parts.
- If the engine cannot get started with a registered mobile key (access key), wait approximately one second until the immobilizer warning lamp starts flashing. Then try to start the engine again with the registered mobile key (access key).
- Do not place a PC within 10cm around mobile keys (access keys) and receiver antennas to avoid any malfunctions of the keyless access with push button start system.

NOTE:

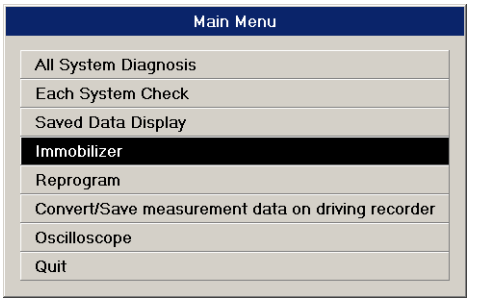
- The keyless access with push button start system is not equipped with some vehicles, depending on the specifications, for North America, Australia, and some other areas.
- Carry out the "Registering the Smart Immobilizer' procedure in case you replace a mobile key (access key), collation ECM, body integrated module or a combination meter.
- In case of replacing a steering lock ECM, execute the "Registering the Smart ECM" procedure.
- When replacing the ID code box, "Registering the Engine ECM" and "Registering the Smart ECM" must be performed in this order.

- In case of replacing an engine ECM, execute the "Registering the Engine ECM" procedure.
- Immobilizer registration is NOT necessary when a power supply ECM or a gateway ECM is replaced.
- When turning the ignition on, press the push engine switch (push-button ignition switch) twice without stepping on the brake pedal. Power supply status changes to ACC-ON, IG-ON, OFF, ACC-ON accordingly, as pressing the push engine switch (push-button ignition switch) once.
- At the time of engine start, press the push engine switch (push-button ignition switch) once with the brake pedal depressed in case of an AT vehicle. In case of an MT vehicle, press the push engine switch (push-button ignition switch) once with the clutch pedal depressed.
- When performing either one of the operations shown below, perform also the "registration of the remote control engine starter".
  1) Installing remote control engine starter
  2) Replacing remote control engine starter
  3) Replacing collation ECM of a vehicle equipped with remote control engine starter
- At the time of replacement of the body integrated module and the combination meter, perform "Registering the Smart Immobilizer".
- When a mobile key (AccessKey) has been lost, perform "Delete the Mobile Key (AccessKey) ID". When all mobile keys (AccessKey) have been lost, refer to "Keyless access with push button start system: Correspondence table at the time of parts failure".
- There is a possibility that registry fails due to poor connector coupling of cabin antenna. In such case, please repair electrical contacts of keyless access indoor antenna (front) before performing immobilizer registry. Keyless access indoor antenna (front) is the only antenna used in immobilizer registry.

Registering the Smart Immobilizer

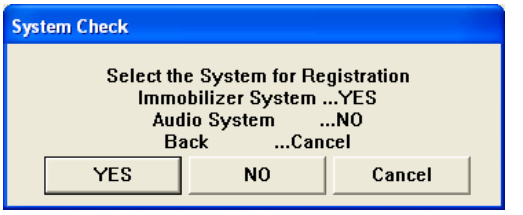
You can get the immobilizer registered for vehicles equipped with keyless access with push button start system.

1. Start the PC application according to section "Starting Up the System" and display the Main Menu screen.
2. On the Main Menu that appears on the display, select [Immobilizer] and then press the Enter key or left-click with the mouse.



SMU-00663

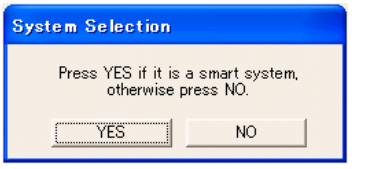
3. Click the [YES] button if the system selection screen is displayed.



SMU-00946

NOTE:
Audio System is the specification only for the U.K.

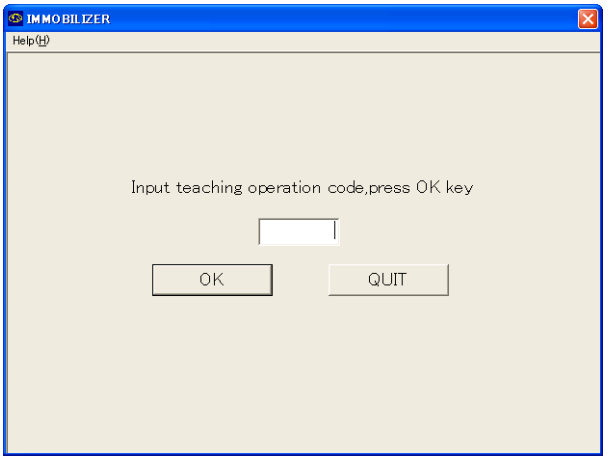
4. On the next screen, confirm the system is keyless access with push button start system. Click the [YES] button.



SMU-00910

NOTE:
The term [smart system] that appears on this screen is synonymous with the term [keyless access with push button start system] used in this text.

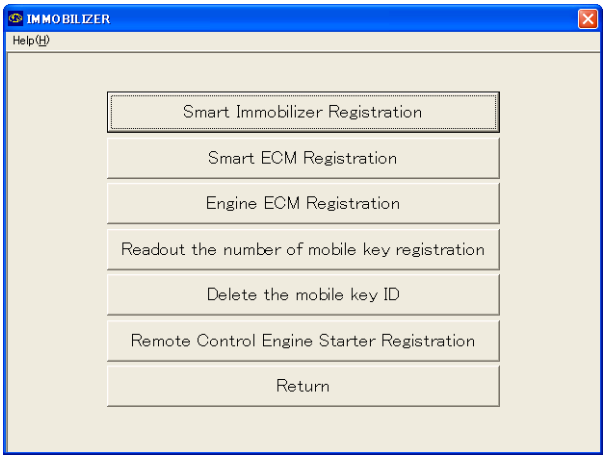
5. Input the teaching operation code, and then click the [OK] button.



SMU-00911

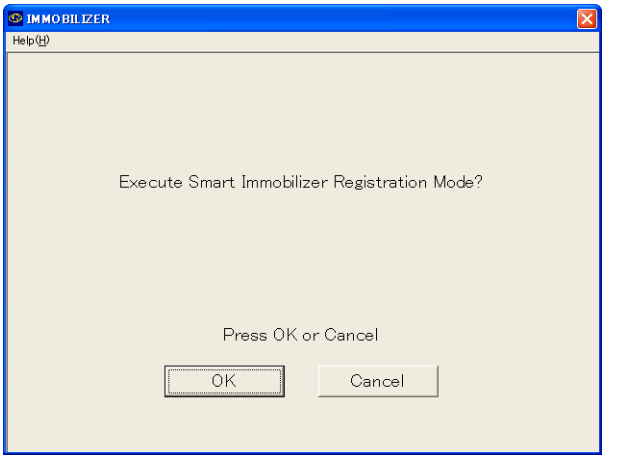
NOTE:
When you wish to return to the Main Menu screen, click the [QUIT] button.

6. The registration mode selection dialog box appears. Click the [Smart Immobilizer Registration] button.



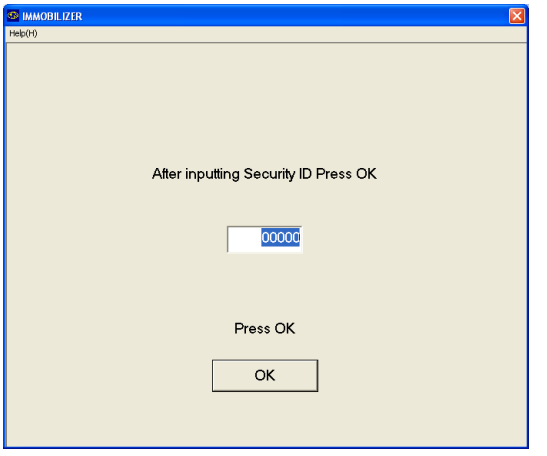
SMU-00912

7. On the registration mode confirmation dialog box that appears, click the [OK] button.



SMU-00913

8. Input the security ID and then click the [OK] button.

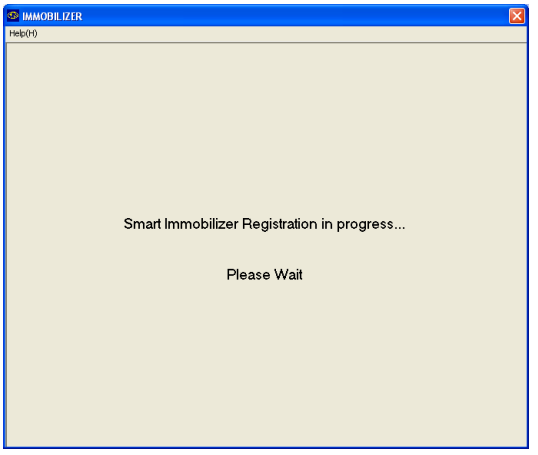


SMU-00914

9. Stand by as the security ID is being collated.

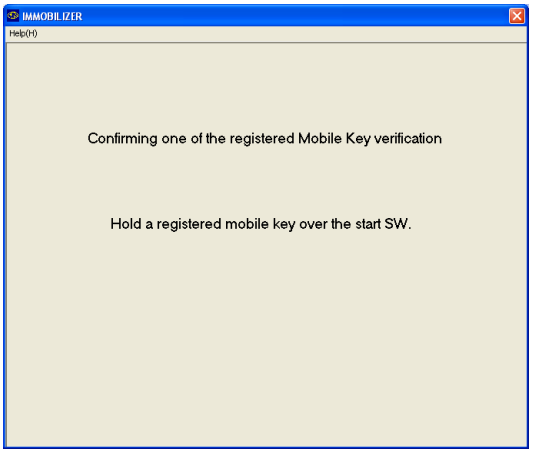
SMU-00915

*10.*Wait until the smart immobilizer is then being registered.



SMU-00916

*11.*The dialog box to confirm already registered mobile keys (access keys) appears. Hold one of those mobile keys (access keys) over the push engine switch (push-button ignition switch).
After the buzzer sounds once, move the mobile key (AccessKey) away from the push engine switch (push-button ignition switch) and go to the next step.



SMU-00917

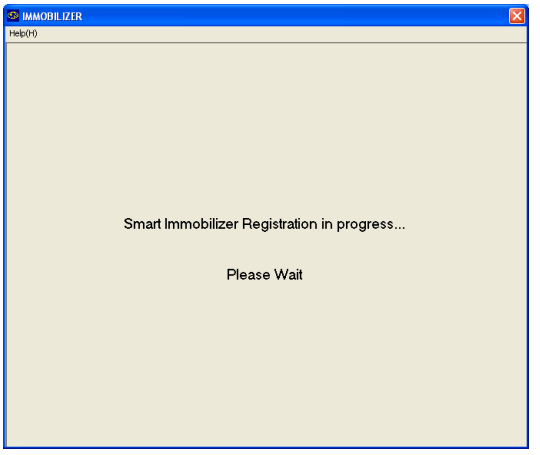
NOTE:
- When holding the mobile key (AccessKey) up to the push engine switch (push-button ignition switch), bring the mobile key (AccessKey) close to the push engine switch (push-button ignition switch) as shown below.
  1) Let the mechanical key insertion opening of the mobile key (AccessKey) face down.
  2) Hold the Subaru ornament side to the push engine switch (push-button ignition switch) side.
  3) Bring it close until it touches the push engine switch (push-button ignition switch).
- The procedure to hold a mobile key (access key) over the push engine switch (push-button ignition switch) has to be done within 30 seconds after the screen above appears.

*12.*When screen displays mobile key (access key) registration mode shown below, hold one mobile key (access key) you wish to register additionally over the push engine switch (push-button ignition switch).

SMU-00918

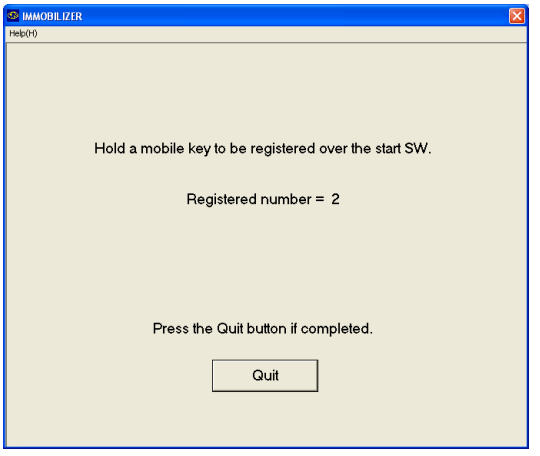
NOTE:
- When the buzzer has sounded twice, the work of holding the mobile key (AccessKey) up has been completed, but for 10 seconds after the work, the mobile key (AccessKey) should be kept inside the vehicle (near the select lever).
- For registration of the next mobile key (AccessKey), the previously registered mobile key (AccessKey) should be removed from the vehicle.
- Do not click the [Quit] button until you finish registering all the mobile keys (access keys) you wish to register.
- When you hold a mobile key (access key) over the push engine switch (push-button ignition switch), do so with 30 seconds after above screen is shown.

*13.*Stand by as the mobile key (access key) is being registered.



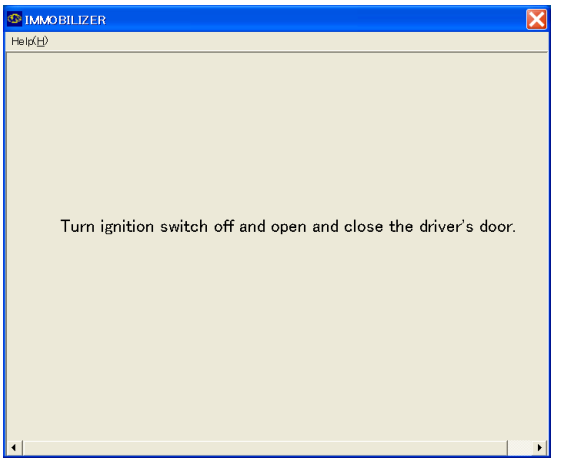
SMU-00916

*14.*Once the registration ends normally, the [Registered number] increases by one as you can see on the screen below.
If you have another mobile key (access key) to be registered, repeat steps 12 through 13. If you do not have any more mobile keys (access keys) to be registered, click the [Quit] button and move on to step 15.



SMU-00919

*15.*Once following screen appears, turn the push engine switch (push-button ignition switch) off. Then open or close the driver's door, depending on its status.



SMU-01121

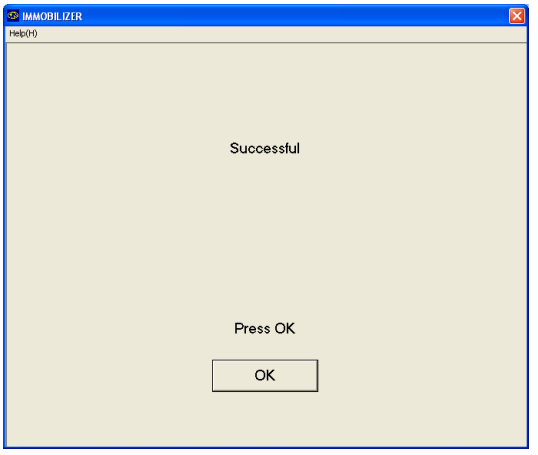
*16.*Then following screen appears. Turn the ignition on.

SMU-00921

*17.*Stand by as the registration to the engine ECM is being completed.

SMU-00922

18. The screen shown below will appear if registration ends normally. Click the [OK] button.



SMU-00923

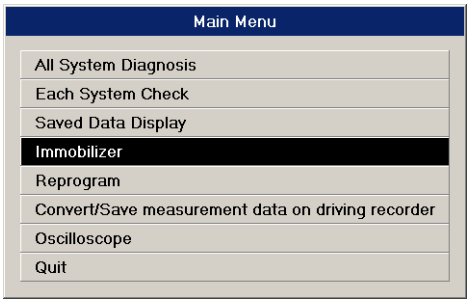
19. After confirming that the keyless access with push button start system operates normally, quit the registration operation.

NOTE:
Depending on the replacement part, a different screen from the screen shown in this item may be displayed. In such a case, perform the work following the on-screen instructions.

Registering the Smart ECM

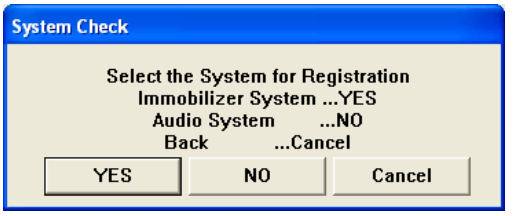
You can get smart-related ECM registered in the keyless access with push button start system.

1. Start the PC application according to section "Starting Up the System" and display the Main Menu screen.
2. On the Main Menu that appears on the display, select [Immobilizer] and then press the Enter key or left-click with the mouse.



SMU-00663

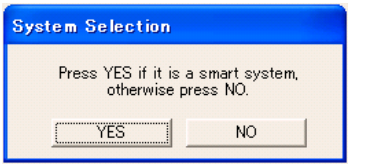
3. Click the [YES] button if the system selection screen is displayed.



SMU-00946

NOTE:
Audio System is the specification only for the U.K.

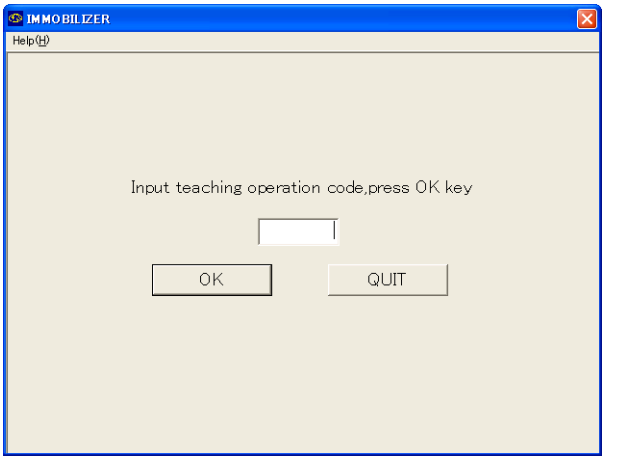
4. On the ne/xt screen, confirm the system is keyless access with push button start system. Click the [YES] button.



SMU-00910

NOTE:
The term [smart system] that appears on this screen is synonymous with the term [keyless access with push button start system] used in this text.

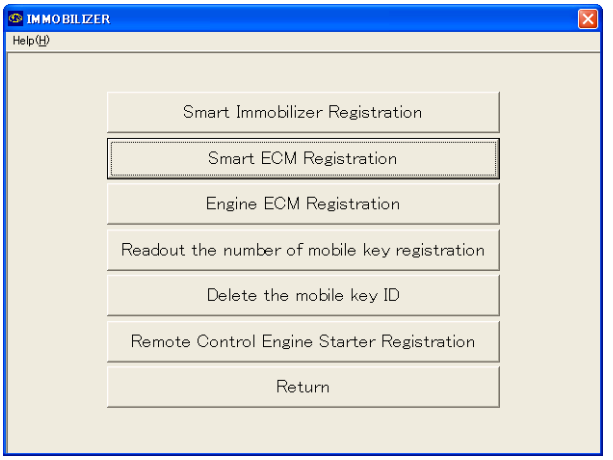
5. Input the teaching operation code, and then click the [OK] button.



SMU-00911

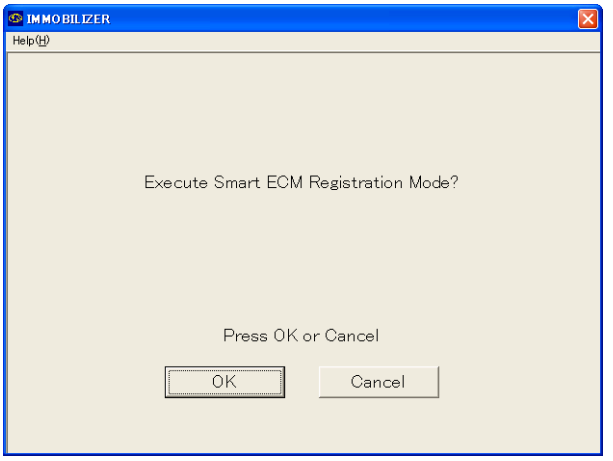
NOTE:
When you wish to return to the Main Menu screen, click the [QUIT] button.

6. The registration mode selection dialog box appears. Click the [Smart ECM Registration] button.



SMU-00924

7. On the registration mode confirmation dialog box that appears, click the [OK] button.



SMU-00925

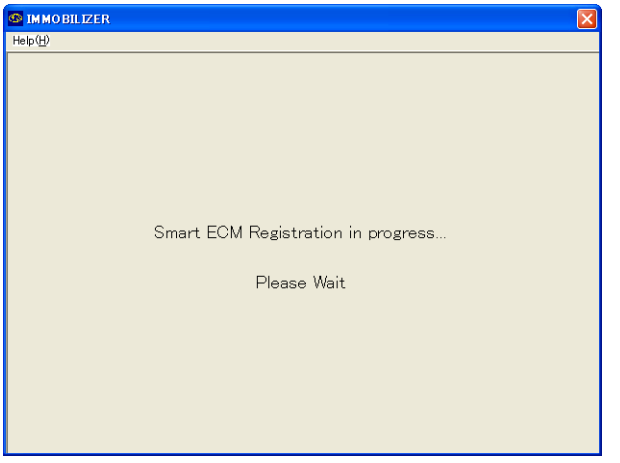
8. Input the security ID and then click the [OK] button.

SMU-00914

9. Stand by as the security ID is being collated.

SMU-00915

10. Wait until the smart ECM is then being registered.



SMU-00926

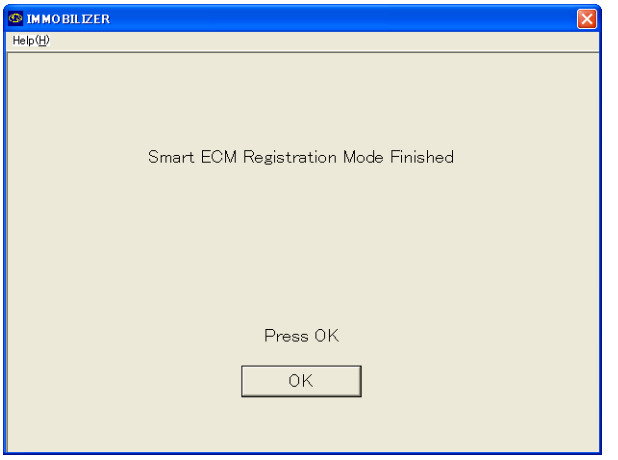
*11.*The dialog box to confirm already registered mobile keys (access keys) appears. Hold one of those mobile keys (access keys) over the push engine switch (push-button ignition switch).
After the buzzer sounds once, move the mobile key (AccessKey) away from the push engine switch (push-button ignition switch) and go to the next step.

SMU-00927

NOTE:

- When holding the mobile key (AccessKey) up to the push engine switch (push-button ignition switch), bring the mobile key (AccessKey) close to the push engine switch (push-button ignition switch) as shown below.
  1) Let the mechanical key insertion opening of the mobile key (AccessKey) face down.
  2) Hold the Subaru ornament side to the push engine switch (push-button ignition switch) side.
  3) Bring it close until it touches the push engine switch (push-button ignition switch).
- The procedure to hold a mobile key (access key) over the push engine switch (push-button ignition switch) has to be done within 30 seconds after the screen above appears.

*12.*Smart ECM registration is then automatically executed. When the registration ends normally, the following screen appears. Click the [OK] button.



SMU-00928

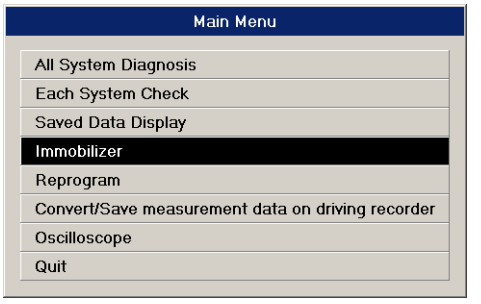
*13.*After confirming that the keyless access with push button start system operates normally, quit the registration operation.

Registering the Engine ECM

You can get engine ECM registered in the keyless access with push button start system.

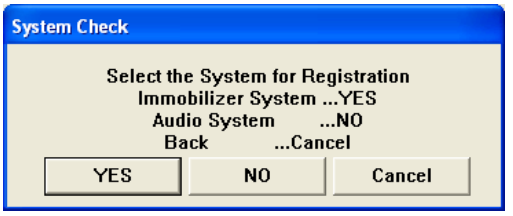
1. Start the PC application according to section "Starting Up the System" and display the Main Menu screen.

2. On the Main Menu that appears on the display, select [Immobilizer] and then press the Enter key or left-click with the mouse.



SMU-00663

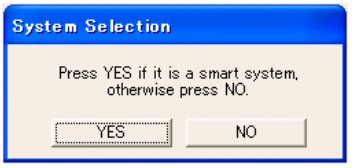
3. Click the [YES] button if the system selection screen is displayed.



SMU-00946

NOTE:
Audio System is the specification only for the U.K.

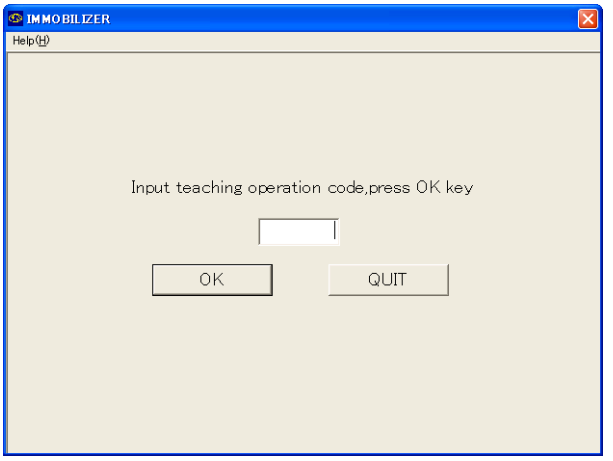
4. On the next screen, confirm the system is keyless access with push button start system. Click the [YES] button.



SMU-00910

NOTE:
The term [smart system] that appears on this screen is synonymous with the term [keyless access with push button start system] used in this text.

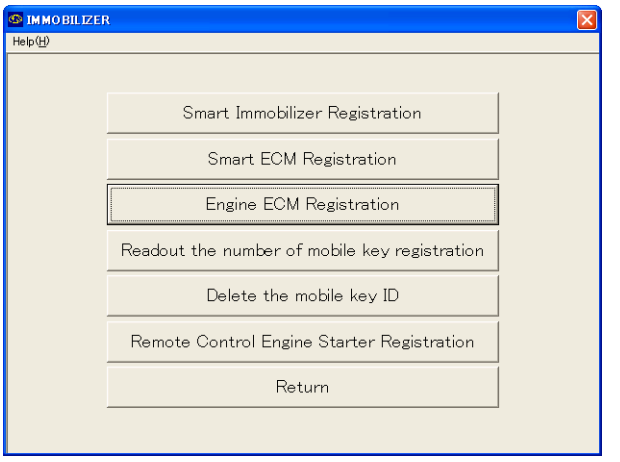
5. Input the teaching operation code, and then click the [OK] button.



SMU-00911

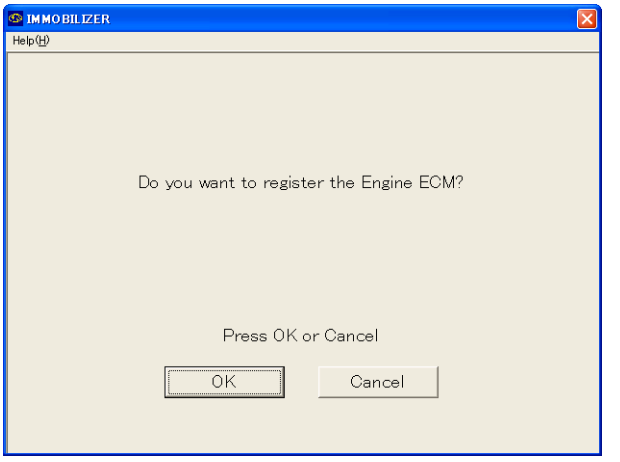
NOTE:
When you wish to return to the Main Menu screen, click the [QUIT] button.

6. The registration mode selection dialog box appears. Click the [Engine ECM Registration] button.



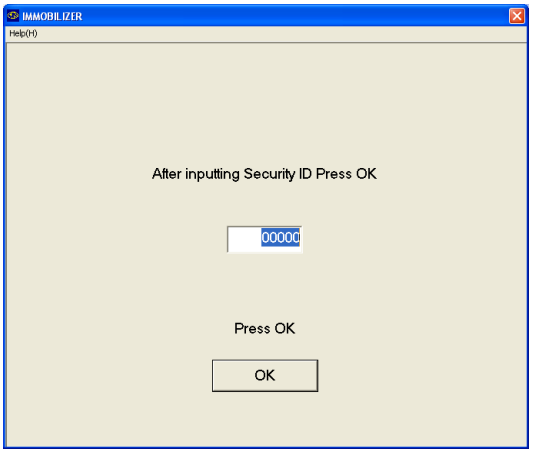
SMU-00929

7. On the registration mode confirmation dialog box that appears, click the [OK] button.



SMU-00930

8. Input the security ID and then click the [OK] button.

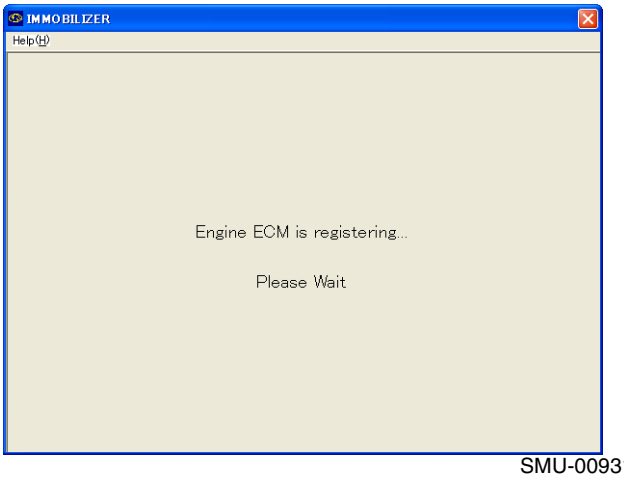


SMU-00914

9. Stand by as the security ID is being collated.

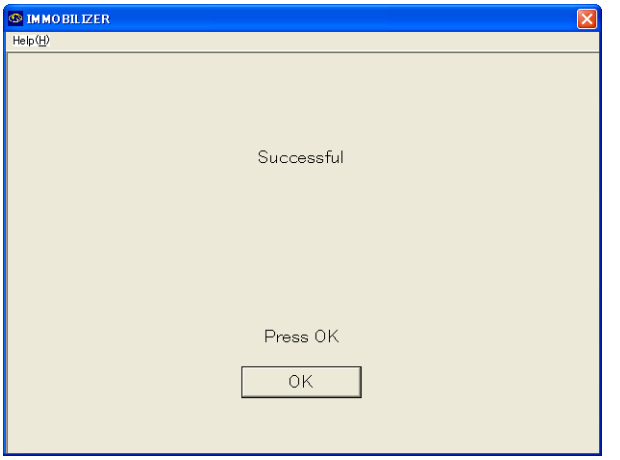
SMU-00915

10. Wait until the engine ECM is then being registered.



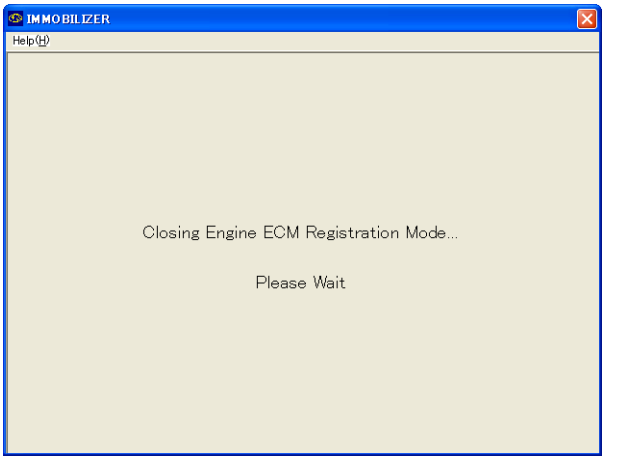
SMU-00931

11. The screen shown below will appear if registration ends normally. Click the [OK] button.



SMU-00932

12. After the screen shown below appears, wait until the Main Menu screen shows up again.



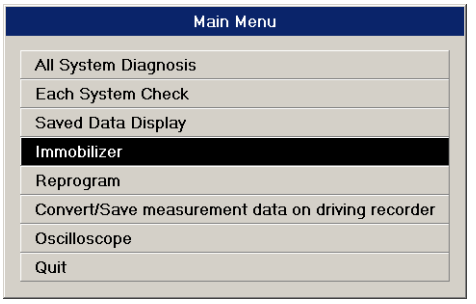
SMU-00933

13. After confirming that the keyless access with push button start system operates normally, quit the registration operation.

Readout the Number of Mobile Key (Access Key) Registration

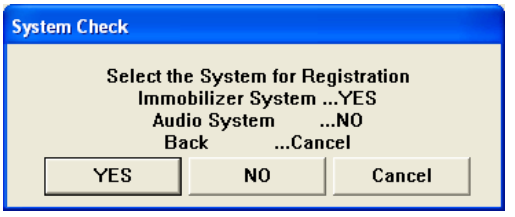
The number of mobile keys (access keys) currently registered on the vehicle can be read.

1. Start the PC application according to section "Starting Up the System" and display the Main Menu screen.
2. On the Main Menu that appears on the display, select [Immobilizer] and then press the Enter key or left-click with the mouse.



SMU-00663

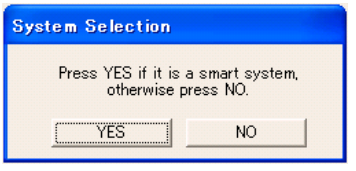
3. Click the [YES] button if the system selection screen is displayed.



SMU-00946

NOTE:
Audio System is the specification only for the U.K.

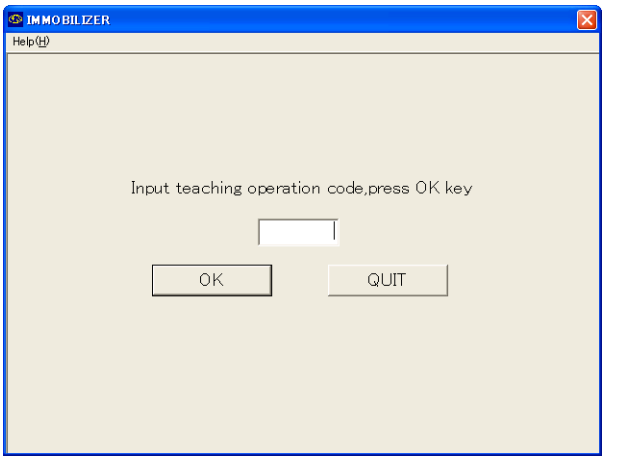
4. On the next screen, confirm the system is keyless access with push button start system. Click the [YES] button.



SMU-00910

NOTE:
The term [smart system] that appears on this screen is synonymous with the term [keyless access with push button start system] used in this text.

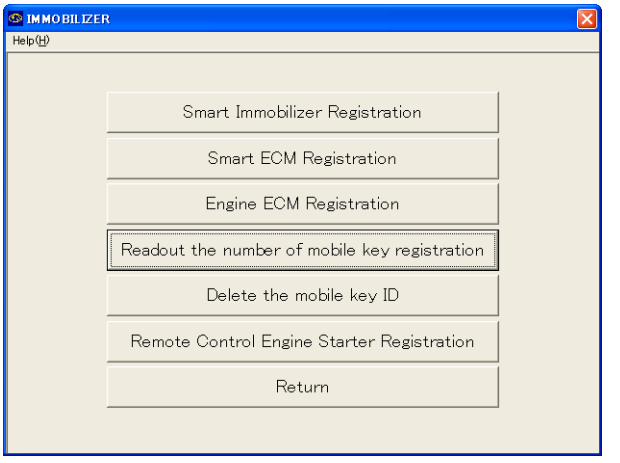
5. Input the teaching operation code, and then click the [OK] button.



SMU-00911

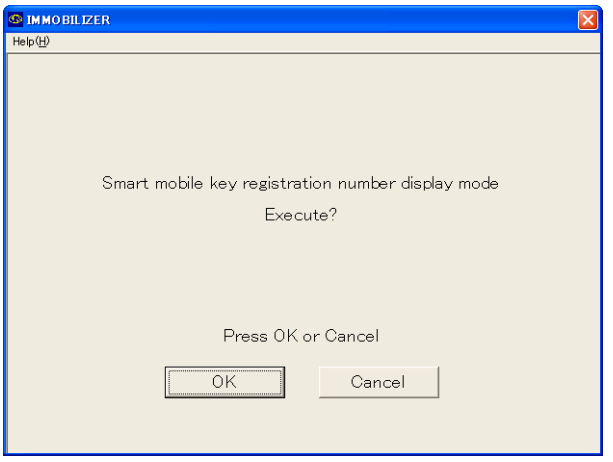
NOTE:
When you wish to return to the Main Menu screen, click the [QUIT] button.

6. The registration mode selection dialog box appears. Click the [Readout the number of mobile key registration] button.



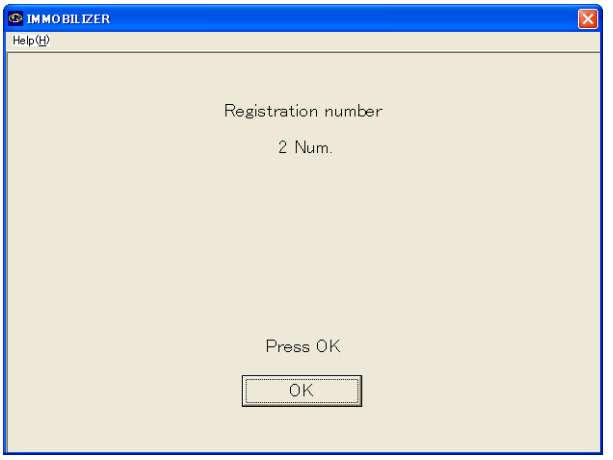
SMU-00934

7. The confirmation dialog box to carry out the registered mobile key (access key) number reading mode is shown. Click the [OK] button.



SMU-00935

8. The number of mobile keys (access keys) currently registered will be displayed. After clicking the [OK] button, the screen will return to the main menu.



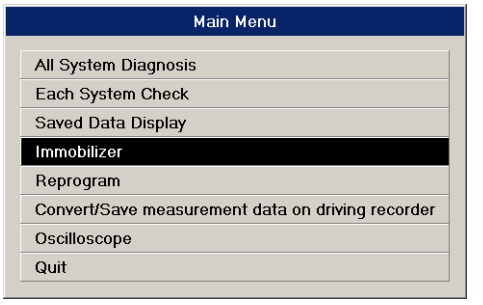
SMU-00936

Delete the Mobile Key (Access Key) ID

Unnecessary mobile key (access key) ID registered on the keyless access with push button start system can be deleted. In this procedure, the necessary ID will not be deleted.

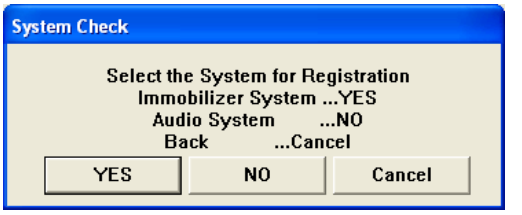
NOTE:
You cannot delete all of mobile key (access key) ID by this function. The ID of a mobile key (access key) placed over the push engine switch (push-button ignition switch) will not be deleted.

1. Start the PC application according to section "Starting Up the System" and display the Main Menu screen.
2. On the Main Menu that appears on the display, select [Immobilizer] and then press the Enter key or left-click with the mouse.



SMU-00663

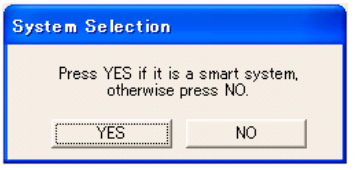
3. Click the [YES] button if the system selection screen is displayed.



SMU-00946

NOTE:
Audio System is the specification only for the U.K.

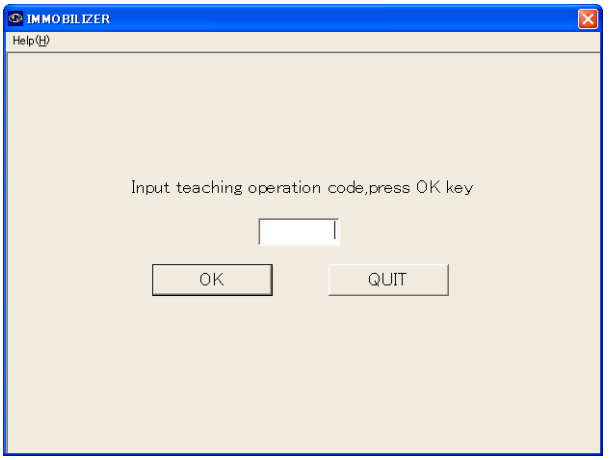
4. On the next screen, confirm the system is keyless access with push button start system. Click the [YES] button.



SMU-00910

NOTE:
The term [smart system] that appears on this screen is synonymous with the term [keyless access with push button start system] used in this text.

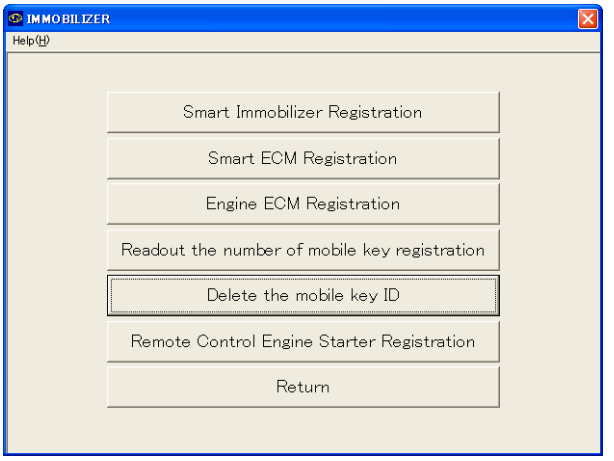
5. Input the teaching operation code, and then click the [OK] button.



SMU-00911

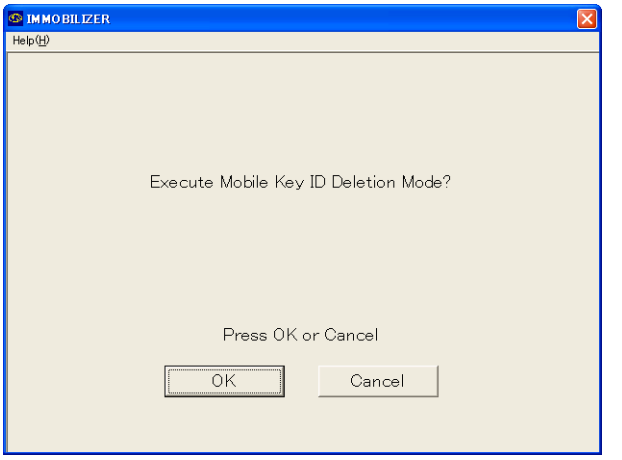
NOTE:
When you wish to return to the Main Menu screen, click the [QUIT] button.

6. The registration mode selection dialog box appears. Click the [Delete the mobile key ID] button.



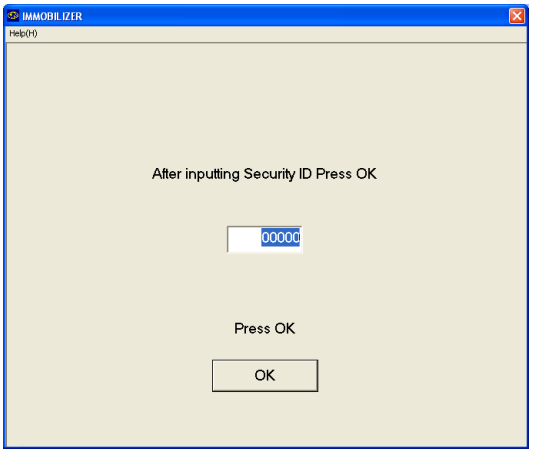
SMU-00937

7. The confirmation dialog box to carry out the mobile key (access key) ID deletion mode appears. Click the [OK] button.



SMU-00938

8. Input the security ID and then click the [OK] button.

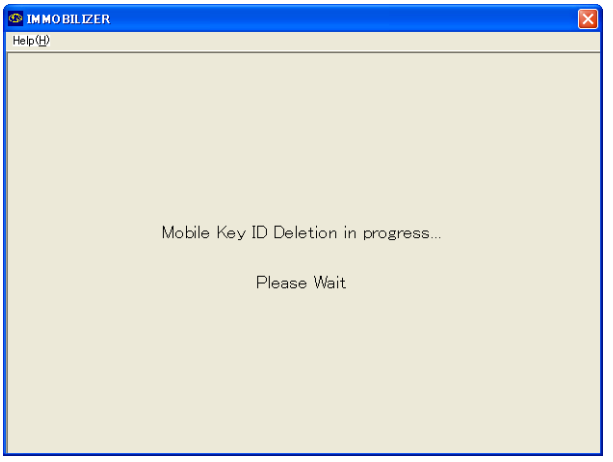


SMU-00914

9. Stand by as the security ID is being collated.

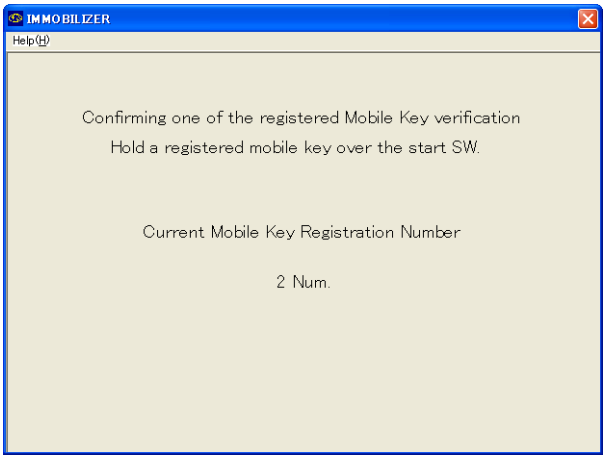
SMU-00915

*10.*Please wait for deleting registered mobile key (access key) ID.



SMU-00939

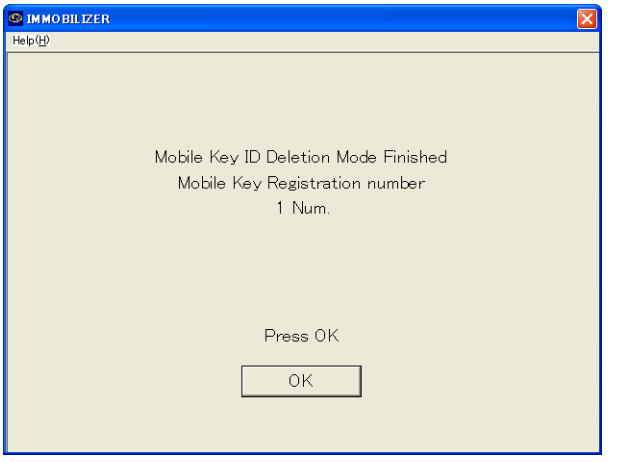
*11.*As the number of registered mobile keys (access keys) confirmation screen will be displayed, place one of the registered mobile keys (access keys), the key, which you do not want to delete the ID, over the push engine switch (push-button ignition switch).
After the buzzer sounds once, move the mobile key (AccessKey) away from the push engine switch (push-button ignition switch) and go to the next step.



SMU-00940

NOTE:
- The ID of a mobile key (access key) placed over the push engine switch (push-button ignition switch) will only be left.
- When holding the mobile key (AccessKey) up to the push engine switch (push-button ignition switch), bring the mobile key (AccessKey) close to the push engine switch (push-button ignition switch) as shown below.
  1) Let the mechanical key insertion opening of the mobile key (AccessKey) face down.
  2) Hold the Subaru ornament side to the push engine switch (push-button ignition switch) side.
  3) Bring it close until it touches the push engine switch (push-button ignition switch).
- The procedure to hold a mobile key (access key) over the push engine switch (push-button ignition switch) has to be done within 30 seconds after the screen above appears.

*12.*The screen shown below will appear if mobile key (access key) ID deletion ends normally. Click the [OK] button.



SMU-00941

*13.*Complete this procedure after confirming if the keyless access with push button start system works properly by using a mobile key (access key), which has the ID not deleted.

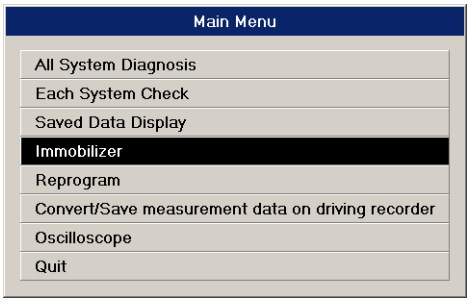
Registering the Remote Control Engine Starter

You can get remote control engine starter registered in the keyless access with push button start system.

NOTE:
Remote control engine starter is the specification only for the Japan.

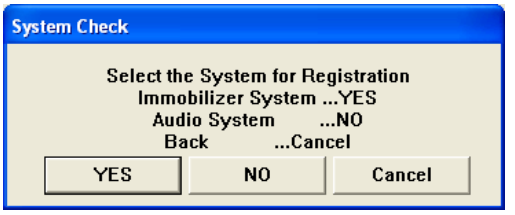
1. Start the PC application according to section "Starting Up the System" and display the Main Menu screen.

2. On the Main Menu that appears on the display, select [Immobilizer] and then press the Enter key or left-click with the mouse.



SMU-00663

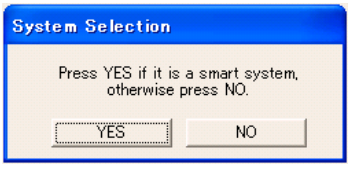
3. Click the [YES] button if the system selection screen is displayed.



SMU-00946

NOTE:
Audio System is the specification only for the U.K.

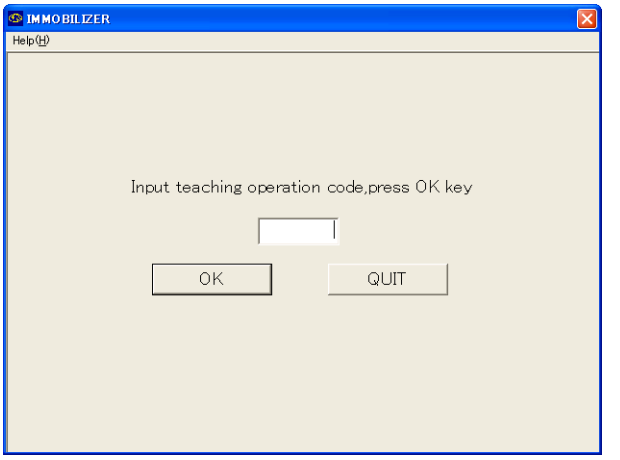
4. On the next screen, confirm the system is keyless access with push button start system. Click the [YES] button.



SMU-00910

NOTE:
The term [smart system] that appears on this screen is synonymous with the term [keyless access with push button start system] used in this text.

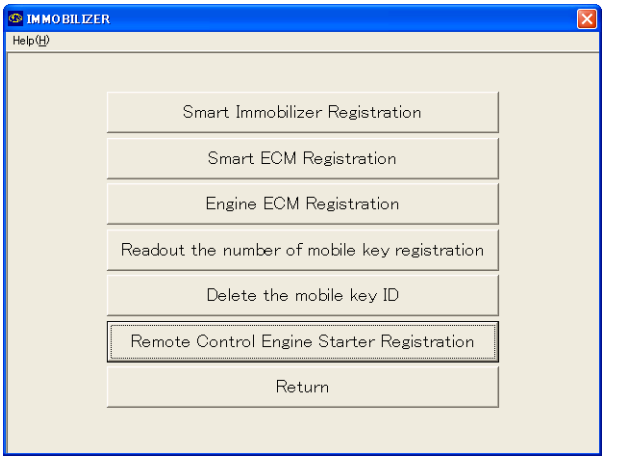
5. Input the teaching operation code, and then click the [OK] button.



SMU-00911

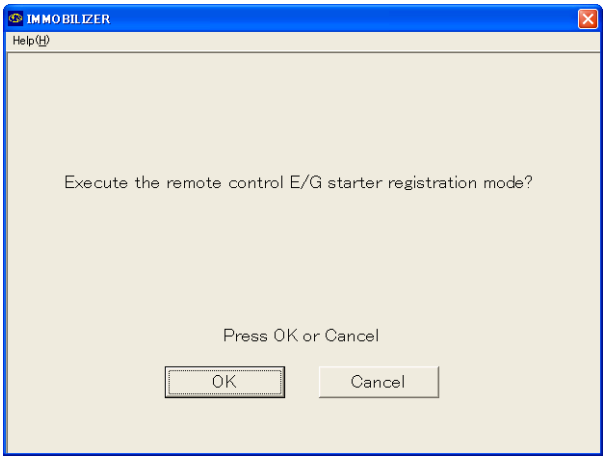
NOTE:
When you wish to return to the Main Menu screen, click the [QUIT] button.

6. The registration mode selection dialog box appears. Click the [Remote Control Engine Starter Registration] button.



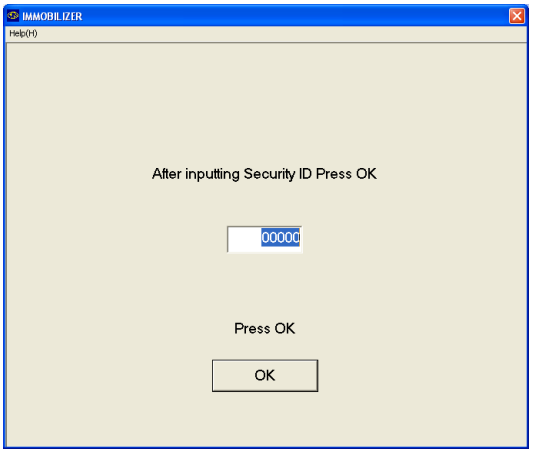
SMU-00942

7. On the registration mode confirmation dialog box that appears, click the [OK] button.



SMU-00943

8. Input the security ID and then click the [OK] button.



SMU-00914

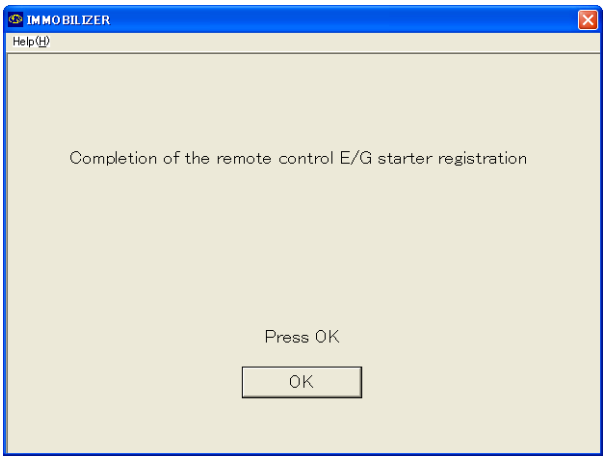
9. Stand by as the security ID is being collated.

SMU-00915

10. Wait until the remote control engine starter is then being registered.

SMU-00944

*11.*The screen shown below will appear if remote control engine starter registration ends normally. Click the [OK] button.



SMU-00945

*12.*After confirming that the keyless access with push button start system and remote control engine starter operate normally, quit the registration operation.

Keyless access with push button start system: Correspondence table at the time of parts failure

IMPORTANT:
Parts to be replaced always shall be replaced by new parts, never by used parts.

Explanation of the SSM III registration mode

Mode name	Contents	Items to be prepared 1	Items to be prepared 2	Remarks
Registering the Smart Immobilizer	To be performed at the time of additional registration of a mobile key (AccessKey) or at the time of replacement of the collation ECM. (Up to seven mobile keys (AccessKey) can be registered.)	Security ID	One registered mobile key (AccessKey)	At the time of collation ECM replacement, all mobile keys (AccessKey) registered for the vehicle areÂ@required.
Registering the Smart ECM	To be performed when the ID code box or the steering lock ECM has been replaced.	Security ID	One registered mobile key (AccessKey)	
Delete the mobile key ID	Leave the ID of one mobile key (AccessKey) and delete all others. (One is required at the time of mode execution.)	Security ID	One registered mobile key (AccessKey)	
Registering the Engine ECM	Perform registration between engine ECM and ID code box.	Security ID		This mode cannot be registered unless all parts other than the engine ECM have been registered.
Registering the Remote Control Engine Starter	When a remote control engine starter has been installed.	Security ID		

*Smart immobilizer registration also includes steering lock initialization work and engine ECM registration.

Parts replacement table

NOTE:
- # This mark indicates that the part is not defective, but must be replaced for theft prevention. (*1,*2)
- When registering smart immobilizer, perform registration with driver's door kept open after closing it once and then opening. If the ignition switch is turned on 10 times in succession with driver's door shut, the body integrated module will enter sleep mode and it will be impossible to turn the ignition on again.

<In case one part failed/was lost>

Failed or lost part						Parts requiring replacement or securement in case of failure of the parts shown left					Measures after parts replacement				
Mobile Key (AccessKey)		Collation ECM	Steering Lock ECM	ID Code Box	Engine ECM	Mobile Key (Access Key)	Collation ECM	Steering Lock ECM	ID Code Box	Engine ECM	Treatment procedure 1	Treatment procedure 2	Treatment procedure 3	Treatment procedure 4	Treatment procedure 5
Examples functioning normally exists	All failed/ lost														
O						One registered mobile key (AccessKey)					Deletion of the mobile key (AccessKey) ID (deletion of the ID of a failed or lost mobile key (AccessKey))	Execution of smart immobilizer registration (when a mobile key (AccessKey) is to be added)			
	O					All mobile keys (Access-Key) to be registered	#		#		Execution of smart immobilizer registration (*1)	(*4)			
		O				All registered mobile keys (AccessKey)	O				Execution of smart immobilizer registration	(*4)			
			O			One registered mobile key (AccessKey)		O			Execution of smart ECM registration	Steering lock initialization work (*3)			
				O		One registered mobile key (AccessKey)			O		Execution of smart ECM registration	Execution of engine ECM registration			
					O					O	Execution of engine ECM registration				

*1. When all mobile keys (AccessKey) have failed or been lost, collation ECM and ID code box must be replaced by new ones and smart immobilizer registration must be performed.
*2. When the collation ECM has been replaced and all registered mobile keys (AccessKey) are not available, the ID code box must be replaced by a new one and smart immobilizer registration must be performed.
*3.Steering lock initialization work: Initialization is complete if the steering is locked about 10 seconds after the ignition switch is turned off and driver's door was either opened then closed or closed then opened.
*4. When the collation ECM has been replaced for a vehicle equipped with a remote control engine starter, perform registration of the remote control engine starter.

<In case two parts failed/were last>

Failed or lost part						Parts requiring replacement or securement in case of failure of the parts shown left					Measures after parts replacement				
Mobile Key (AccessKey)		Collation ECM	Steering Lock ECM	ID Code Box	Engine ECM	Mobile Key (Access key)	Collation ECM	Steering Lock ECM	ID Code Box	Engine ECM	Treatment procedure 1	Treatment procedure 2	Treatment procedure 3	Treatment procedure 4	Treatment procedure 5
Examples functioning normally exists	All failed/ lost														
o		o				All mobile keys (Access-Key) to be registered	o		#		Execution of smart immo-bilizer registration (*2)	(*4)			
o			o			One registered mobile key (AccessKey)		o			Execution of smart ECM registration	Steering lock initialization work (*3)	Deletion of the mobile key (AccessKey) ID (deletion of the ID of a failed or lost mobile key (AccessKey))	Execution of smart immo-bilizer registration (when a mobile key (AccessKey) is to be added)	
o				o		One registered mobile key (AccessKey)			o		Execution of smart ECM registration	Execution of engine ECM registration	Deletion of the mobile key (AccessKey) ID (deletion of the ID of a failed or lost mobile key (AccessKey))	Execution of smart immo-bilizer registration (when a mobile key (AccessKey) is to be added)	
o					o	One registered mobile key (AccessKey)				o	Deletion of the mobile key (AccessKey) ID (deletion of the ID of a failed or lost mobile key (AccessKey))	Execution of engine ECM registration	Execution of smart immo-bilizer registration (when a mobile key (AccessKey) is to be added)		
	o	o				All mobile keys (Access-Key) to be registered	o		#		Execution of smart immo-bilizer registration (*1)	(*4)			
	o		o			All mobile keys (Access-Key) to be registered	#	o	#		Execution of smart immo-bilizer registration (*1)	(*4)			
	o			o		All mobile keys (Access-Key) to be registered	#		o		Execution of smart immo-bilizer registration (*1)	(*4)			
	o				o	All mobile keys (Access-Key) to be registered	#		#	o	Execution of smart immo-bilizer registration (*1)	(*4)			
		o	o			All registered mobile keys (AccessKey)	o	o			Execution of smart immo-bilizer registration	(*4)			
		o		o		All mobile keys (Access-Key) to be registered	o		o		Execution of smart immo-bilizer registration	(*4)			
		o			o	All registered mobile keys (AccessKey)	o			o	Execution of smart immo-bilizer registration	(*4)			
			o	o		One registered mobile key (AccessKey)		o	o		Execution of smart ECM registration	Steering lock initialization work (*3)	Execution of engine ECM registration		
			o		o	One registered mobile key (AccessKey)		o		o	Execution of smart ECM registration	Steering lock initialization work (*3)	Execution of engine ECM registration		
				o	o	One registered mobile key (AccessKey)			o	o	Execution of smart ECM registration	Execution of engine ECM registration			

*1. When all mobile keys (AccessKey) have failed or been lost, collation ECM and ID code box must be replaced by new ones and smart immobilizer registration must be performed.
*2. When the collation ECM has been replaced and all registered mobile keys (AccessKey) are not available, the ID code box must be replaced by a new one and smart immobilizer registration must be performed.
*3.Steering lock initialization work: Initialization is complete if the steering is locked about 10 seconds after the ignition switch is turned off and driver's door was either opened then closed or closed then opened.
*4. When the collation ECM has been replaced for a vehicle equipped with a remote control engine starter, perform registration of the remote control engine starter.

<In case there are three parts that failed/lost>

Failed or lost part						Parts requiring replacement or securement in case of failure of the parts shown left					Measures after parts replacement				
Mobile Key (AccessKey)		Collation ECM	Steering Lock ECM	ID Code Box	Engine ECM	Mobile Key (Access key)	Collation ECM	Steering Lock ECM	ID Code Box	Engine ECM	Treatment procedure 1	Treatment procedure 2	Treatment procedure 3	Treatment procedure 4	Treatment procedure 5
Examples functioning normally exists	All failed/ lost														
O		O	O			All mobile keys (Access-Key) to be registered	O	O			Execution of smart immo-bilizer registration (*2)	(*4)			
O		O		O		All mobile keys (Access-Key) to be registered	O		O		Execution of smart immo-bilizer registration	(*4)			
O		O			O	All mobile keys (Access-Key) to be registered	O			O	Execution of smart immo-bilizer registration (*2)	(*4)			
O			O	O		One registered mobile key (AccessKey)		O	O		Execution of smart ECM registration	Steering lock initialization work (*3)	Execution of smart ECM registration	Deletion of the mobile key (AccessKey) ID (deletion of the ID of a failed or lost mobile key (AccessKey))	Execution of smart immo-bilizer registration (when a mobile key (AccessKey) is to be added)
O			O		O	One registered mobile key (AccessKey)		O		O	Execution of smart ECM registration	Steering lock initialization work (*3)	Execution of smart ECM registration	Deletion of the mobile key (AccessKey) ID (deletion of the ID of a failed or lost mobile key (AccessKey))	Execution of smart immo-bilizer registration (when a mobile key (AccessKey) is to be added)
O				O	O	One registered mobile key (AccessKey)			O	O	Execution of smart ECM registration	Execution of engine ECM registration	Deletion of the mobile key (AccessKey) ID (deletion of the ID of a failed or lost mobile key (AccessKey))	Execution of smart immo-bilizer registration (when a mobile key (AccessKey) is to be added)	
	O	O	O			All mobile keys (Access-Key) to be registered	O	O	#		Execution of smart immo-bilizer registration(*1)	(*4)			
	O	O		O		All mobile keys (Access-Key) to be registered	O		O		Execution of smart immo-bilizer registration	(*4)			
	O	O			O	All mobile keys (Access-Key) to be registered	O		#	O	Execution of smart immo-bilizer registration(*1)	(*4)			
	O		O	O		All mobile keys (Access-Key) to be registered	#	O	O		Execution of smart immo-bilizer registration(*1)	(*4)			
	O		O		O	All mobile keys (Access-Key) to be registered	#	O	#	O	Execution of smart immo-bilizer registration(*1)	(*4)			
	O			O	O	All mobile keys (Access-Key) to be registered	#		O	O	Execution of smart immo-bilizer registration(*1)	(*4)			
		O	O	O		All mobile keys (Access-Key) to be registered	O	O	O		Execution of smart immo-bilizer registration	(*4)			
		O	O		O	All registered mobile keys (AccessKey)	O	O		O	Execution of smart immo-bilizer registration	(*4)			
		O		O	O	All mobile keys (Access-Key) to be registered	O		O	O	Execution of smart immo-bilizer registration	(*4)			
			O	O	O	One registered mobile key (AccessKey)		O	O	O	Execution of smart ECM registration	Steering lock initialization work (*3)	Execution of engine ECM registration		

*1. When all mobile keys (AccessKey) have failed or been lost, collation ECM and ID code box must be replaced by new ones and smart immobilizer registration must be performed.
*2. When the collation ECM has been replaced and all registered mobile keys (AccessKey) are not available, the ID code box must be replaced by a new one and smart immobilizer registration must be performed.
*3.Steering lock initialization work: Initialization is complete if the steering is locked about 10 seconds after the ignition switch is turned off and driver's door was either opened then closed or closed then opened.
*4. When the collation ECM has been replaced for a vehicle equipped with a remote control engine starter, perform registration of the remote control engine starter.

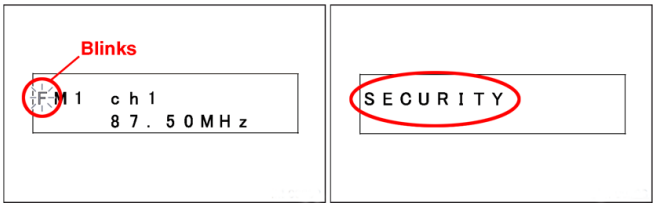
Registering the Audio Security (U.K Only)

*Please note that this procedure document is in English only, because audio security function is for United Kingdom only.

You can perform serial registry of audio and navigation system with audio security function.

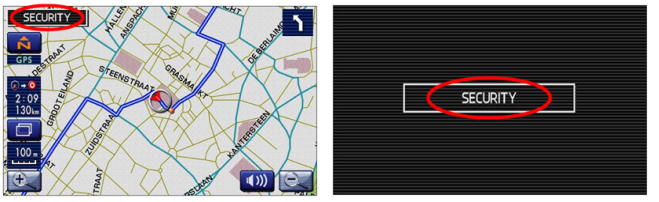
NOTE:
When audio or navigation system screen displays message shown below, it is necessary to perform audio security registering.

<Audio>



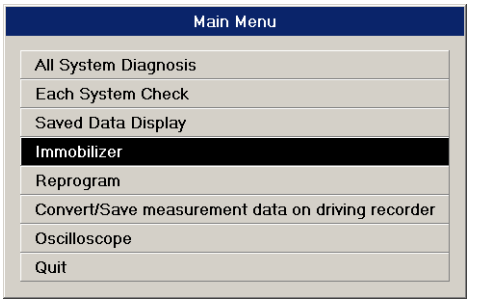
SMU-01095

<Navigation System>



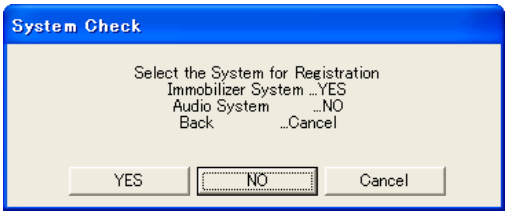
SMU-01096

1. Start the PC application according to section "Starting Up the System" and display the Main Menu screen.
2. On the Main Menu that appears on the display, select [Immobilizer] and then press the Enter key or left-click with the mouse.



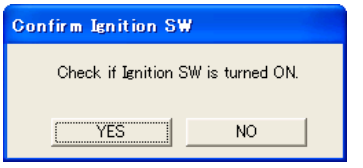
SMU-00663

3. Click the [NO] button if the system selection screen is displayed.



SMU-01097

4. Click [YES] after confirming if the ignition switch is ON, as following screen will be displayed.

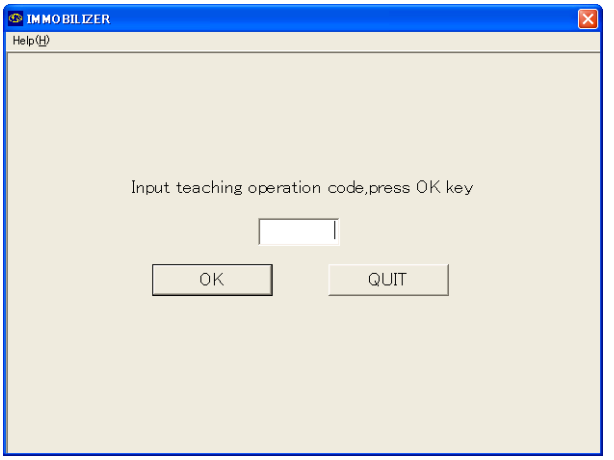


SMU-00909

5. In response to the compliance verification dialog box that appears, click the [OK] button.

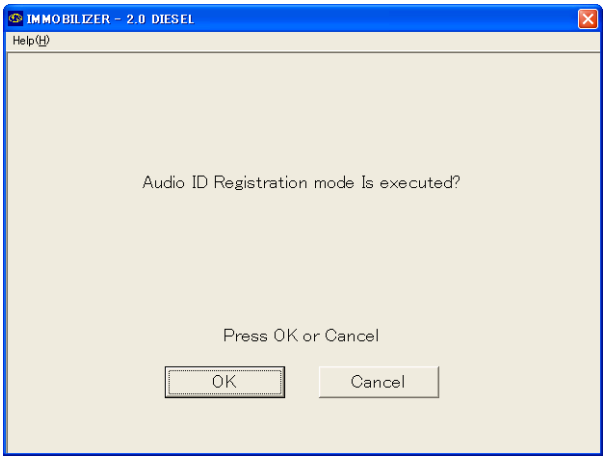
SMU-00876

6. Input the teaching operation code, and then click the [OK] button.



SMU-00911

7. On the registration mode confirmation dialog box that appears, click the [OK] button.



SMU-01098

8. Please stand by while the audio or navigation system registering is underway.

SMU-01099

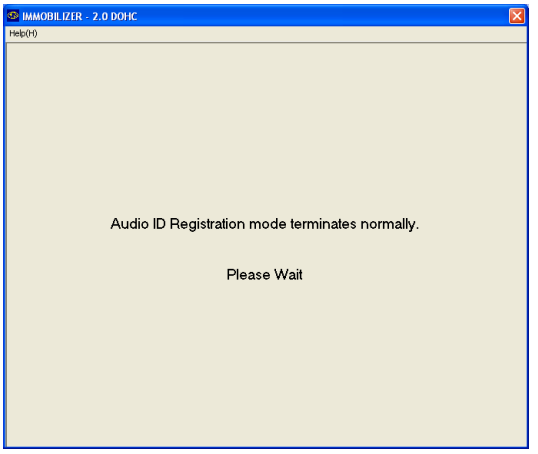
NOTE:
While registering is underway, audio or navigation system screen displays [REENTRY] message.

9. The screen shown below will appear if registration ends normally. Click the [OK] button.

SMU-01100

NOTE:
When registering is completed, audio or navigation system screen displays [COMPLETE] message.

*10.*Please stand by while the screen displays message shown below, until screen returns to code entry mode for teaching operation.



SMU-01101

*11.*After confirming that the audio and navigation system is operating normally, quit the registration operation.

Learning and inspection mode related to AT

Performing air bleeding and learning possible after replacing automatic transmission ASSY, ATF and TCM.

IMPORTANT:
The required learning or work according to the performed work is shown in the following list.
The learning or work in the following list must be performed, as otherwise shifting shocks and other defects may be caused.

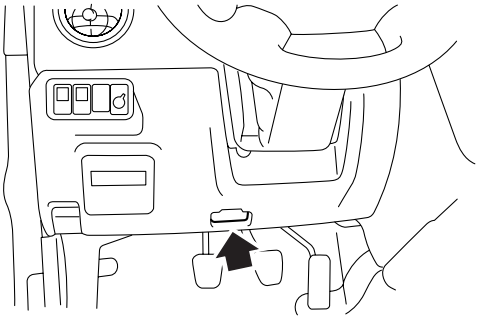
Work item	Required learning or work
TCM replacement	• AT learning
ATF replacement	• AT air bleeding
Replacement or disassembly of the transmission ASSY	• AT learning • AT air bleeding
Control valve body replacement	• AT learning • AT air bleeding
Execution of [Clear Memory 2]	• AT learning

NOTE:
Depending on vehicle specification, AT air bleeding may not be necessary. In such case, [AT air bleeding mode] will not be displayed on the menu.

Getting Ready

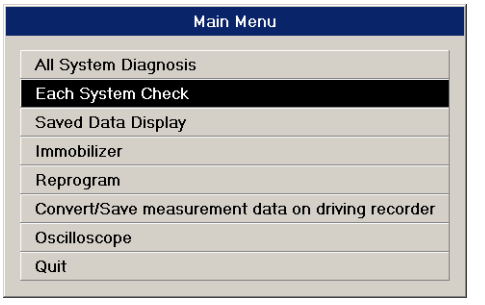
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



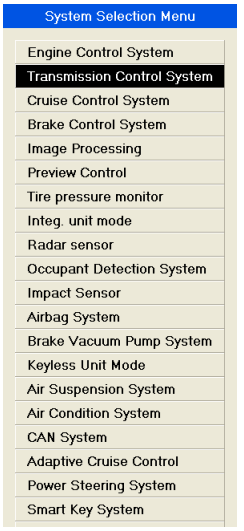
SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle's ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



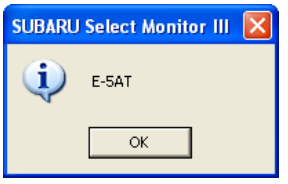
SMU-00600

7. On the System Selection Menu, select [Transmission Control System] and then press the Enter key or left click with the mouse.



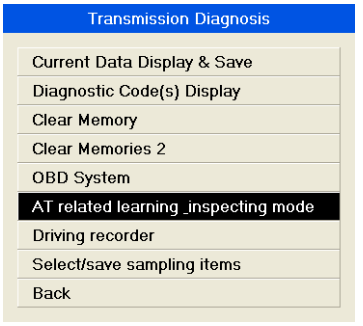
SMU-01043

8. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.



SMU-01044

9. This displays the dialog box shown below. Select [AT related learning_inspecting mode] and then press the Enter key or left-click with the mouse.



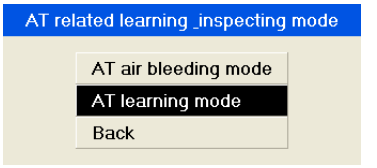
SMU-01045

AT learning mode

After completing this procedure, make sure to confirm if there is no malfunction, such as a shifting shock, by actually driving the car. If you find any malfunctions, execute the learning procedure again.
In case that malfunctions are not solved after performing the learning process again, check if there are any problems with other parts.

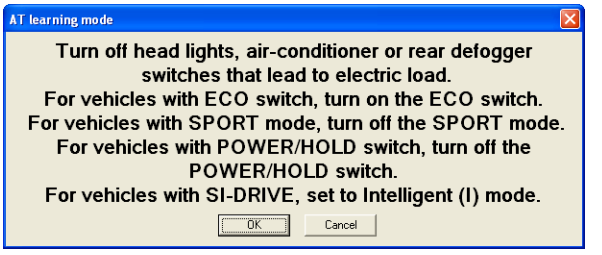
IMPORTANT:
Always perform [AT learning Mode] at the time of TCM replacement and transmission ASSY replacement or disassembly.

1. Select [AT learning Mode] from the item selection screen and press the [Enter] key or click the left mouse button.



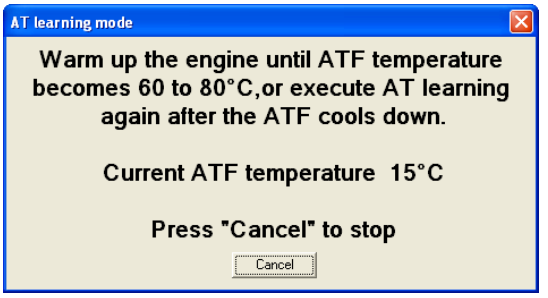
SMU-01046

2. Following the instructions that appear on the screen, setup each switch and mode.
Click the [OK] button to go to the next screen.



SMU-01122

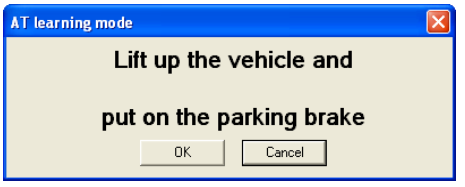
NOTE:
If following message is shown, warm up the engine until ATF temperature becomes 60 to 80°C(140 to 176°F), or cool it down, according to the instructions appeared on the screen. Once the ATF temperature reaches 60 to 80 degC, the next procedure is executed automatically.
To cancel learning, click the [Cancel] button.



SMU-01123

NOTE:
Stop the engine when ATF is to be cooled down.

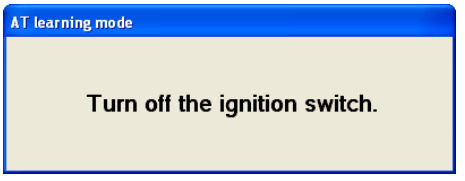
3. Lift up the vehicle following the screen instructions and pull the parking brake.
Click the [OK] button to go to the next screen.



SMU-01078

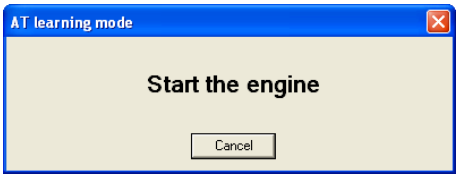
IMPORTANT:
- When performing learning control, be sure to keep the lower edge of the tires 30 cm (11.8 in) or more above the ground as vehicle vibrates during the work.
- When performing the transfer clutch learning, fully apply the parking brake to avoid tires from rotating.
- Move the Select lever to P range.

4. Follow the screen instructions and switch off the ignition switch.



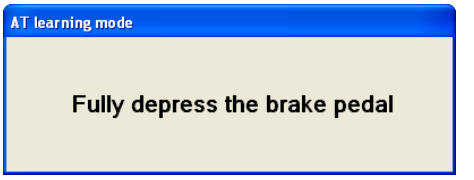
SMU-01079

5. Follow the screen instructions and start the engine.



SMU-01080

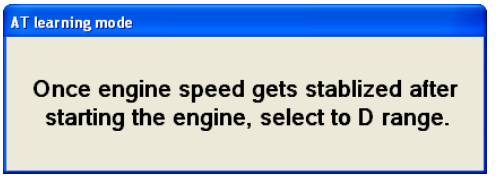
6. Follow the screen instructions and depress the brake pedal all the way.



SMU-01082

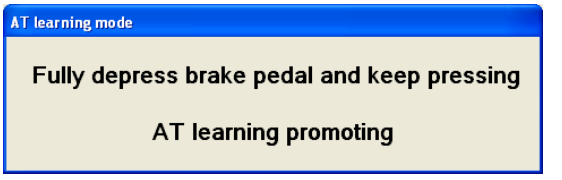
NOTE:
Afterwards, leave the brake pedal depressed until step 8.

7. Follow the screen instructions and set the select lever to range D.



SMU-01124

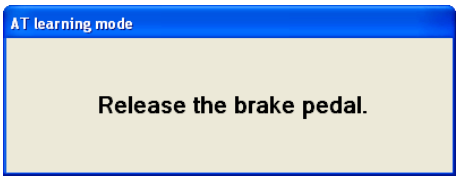
8. The following screen is displayed. Please wait.



SMU-01084

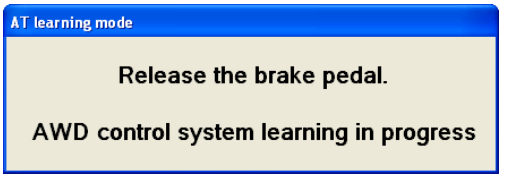
NOTE:
- During the learning process, if above screen is being shown for more than two minutes, release the brake pedal and execute the learning procedure again.
- During the learning process, there are cases that hunting of the engine may occur and accordingly learning may end abnormally. In such cases, execute the learning procedure again with the headlights in the High beam condition.

9. Follow the screen instructions and release the brake pedal.



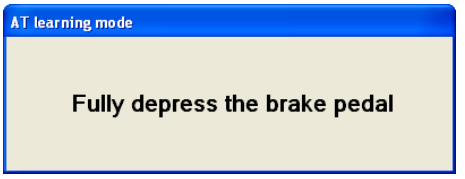
SMU-01085

10. The following screen is displayed. Please wait.



SMU-01086

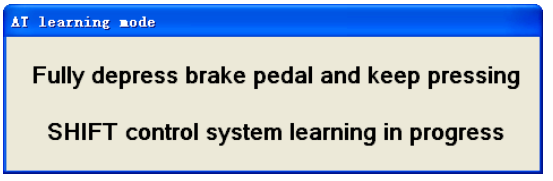
11. Follow the screen instructions and depress the brake pedal all the way.



SMU-01082

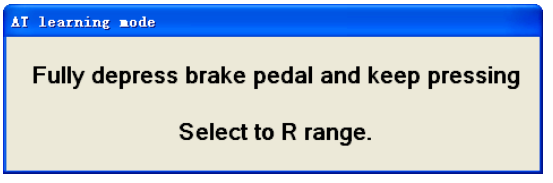
NOTE:
Afterwards, leave the brake pedal depressed until step 19.

12. The following screen is displayed. Please wait.



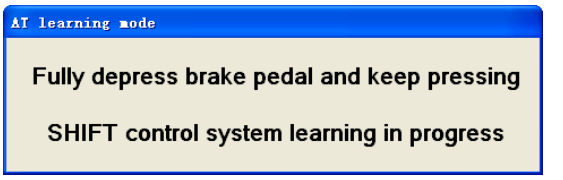
SMU-01087

13. Follow the screen instructions and set the select lever to range R.



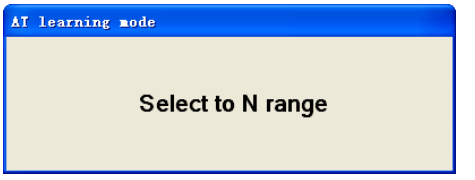
SMU-01088

14. The following screen is displayed. Please wait.



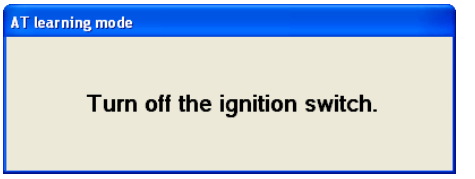
SMU-01087

15. Follow the screen instructions and set the select lever to range N.



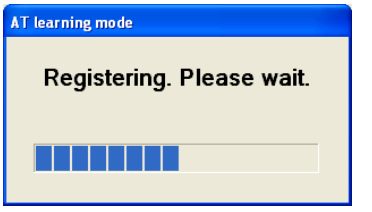
SMU-01089

16. Follow the screen instructions and switch off the ignition switch.



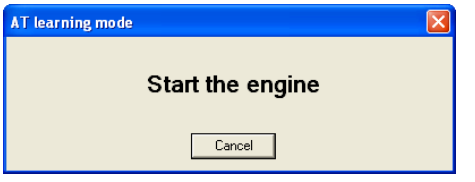
SMU-01079

17. The following screen is displayed. Please wait.



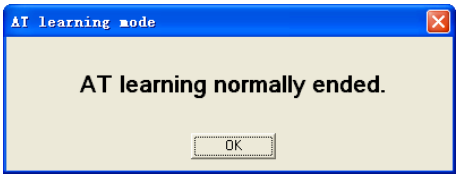
SMU-01091

18. Follow the screen instructions and start the engine.



SMU-01080

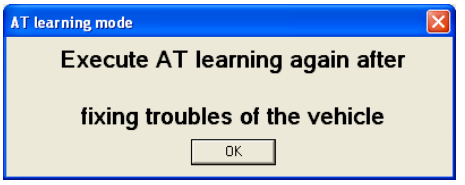
*19.*The following screen is displayed when learning has been completed correctly. Click the [OK] button.



SMU-01092

NOTE:

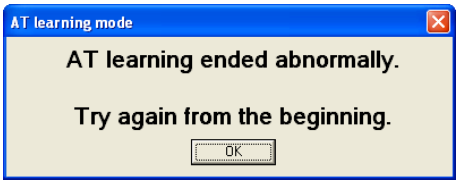
- The following screen may be displayed during the work. In that case, confirm the display contents and then click the [OK] button.



SMU-01081

Of the contents shown above, their main causes and remedies are shown in the following chart.

Main causes of the contens shown	Remedies
• Detection of diagnostic codes	After correcting the troubles based on the diagnostic codes, perform the [AT learning mode] again from the beginning.



SMU-01093

Of the contents shown above, their main causes and remedies are shown in the following chart.

Detection of diagnostic code(s)	Remedies
• A diagnostic code was detected during the AT learning process.	After correcting the troubles based on the diagnostic codes, perform the [AT learning mode] again from the beginning.
• Un-instructed operations were taken during the AT learning process. • Depressing the brake pedal is not enough • Pulling the parking brake lever is not enough • Abnormal Idle Up	Execute the [AT learning mode] again from the beginning.

- Depending on vehicle specification, some of these displays may not appear at all. In such case, please follow the directions actually shown on the screen.

AT air bleeding mode

IMPORTANT:
Always perform [AT air bleeding mode] at the time of control valve body, ATF replacement and transmission ASSY replacement or disassembly.

NOTE:
For the work procedure, refer to "AT Learning Mode" of the respective item and perform the work following the screen instructions.

Learning, inspection, and registration mode related to diesel engines (Excluding North America)

* This function is not supported in North America.

This item describes the learning functions, inspection functions, and registration functions related to diesel engines.

IMPORTANT:
The work required for re-registration or learning work etc. because of replaced items is shown in the following list.
The work in the following list must be performed, as otherwise exhaust gas, abnormal noise, bad engine performance, and other defects may be caused.

Replacement items	Required work items
ECM	• Registering the Immobilizer • Registering the Injector Code • Fuel injector injection amount learning • Fuel pump duty learning • EGR valve opening angle learning
Fuel pump	• Fuel pump duty learning
Injector	• Registering the Injector Code • Fuel injector injection amount learning
EGR valve	• EGR valve opening angle learning

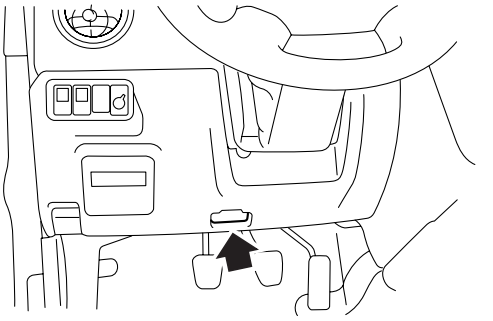
Diesel compulsory learning mode

Compulsory learning can be effected at the time of replacement of fuel pump, injector, or EGR valve of a vehicle with a diesel engine.

Getting Ready

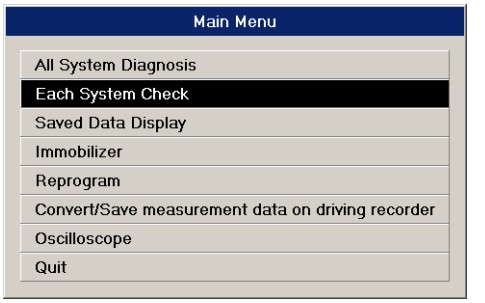
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



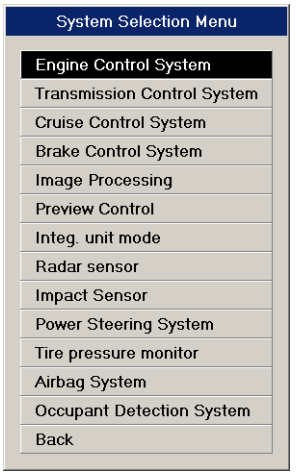
SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle's ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



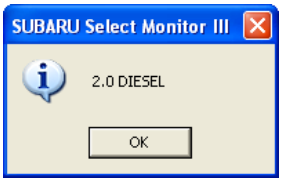
SMU-00600

7. On the System Selection Menu, select [Engine Control System] and then press the Enter key or left click with the mouse.



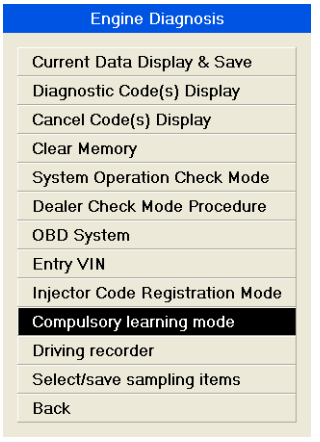
SMU-00665

8. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.



SMU-01047

9. This displays the dialog box shown below. Select [Compulsory learning mode] and then press the Enter key or left-click with the mouse.



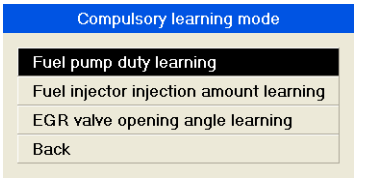
SMU-01048

Fuel pump duty learning

IMPORTANT:
At the time of fuel pump and ECM replacement, [Fuel pump duty learning] must be performed.

NOTE:
Perform the work with the engine started.

1. Select [Fuel pump duty learning] from the item selection screen and press the [Enter] key or click the left mouse button.



SMU-01049

2. When the dialog box shown below appears, click the [OK] button.

SMU-01050

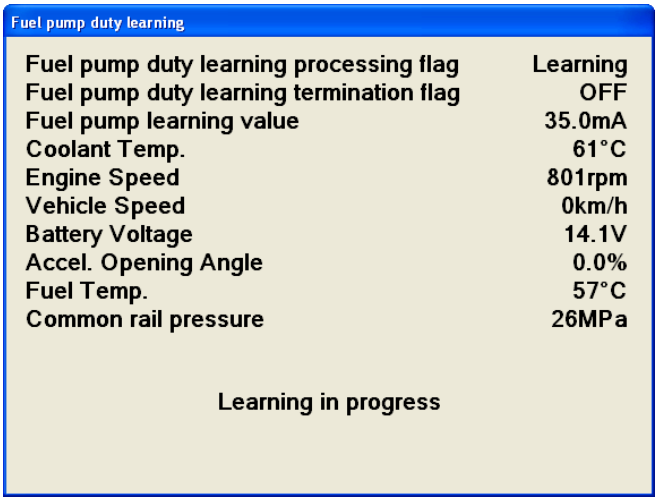
NOTE:
When the following screen is displayed, start the engine and click the [OK] button.

SMU-01051

3. When the dialog box shown below appears, click the [OK] button.

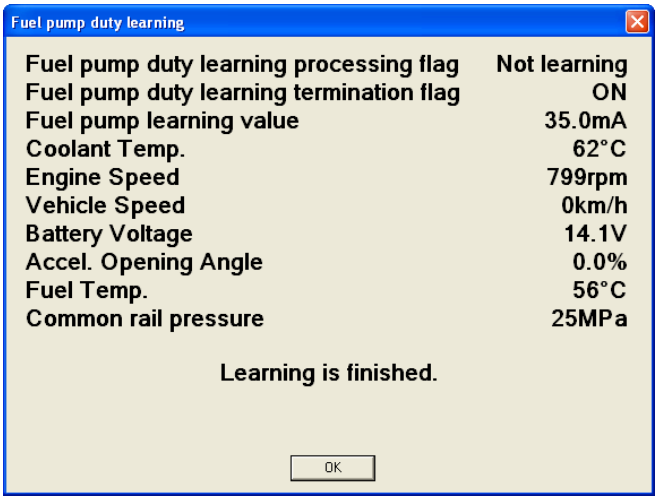
SMU-01052

4. The learning execution screen is displayed. Please wait.



SMU-01053

5. The learning completion screen is displayed. Click the [OK] button.



SMU-01054

Fuel injector injection amount learning

IMPORTANT:
At the time of injector and ECM replacement, always execute [Fuel injector injection amount learning] and [Registering the Injector Code].

NOTE:
- Refer to [Fuel pump duty learning] of this item for the work procedure and perform the work following the screen instructions.
- Perform the work with the engine started.

EGR valve opening angle learning

IMPORTANT:
At the time of EGR valve and ECM replacement, [EGR valve opening angle learning] must be performed.

NOTE:
- Refer to [Fuel pump duty learning] of this item for the work procedure and perform the work following the screen instructions.
- Perform the work with the engine started.

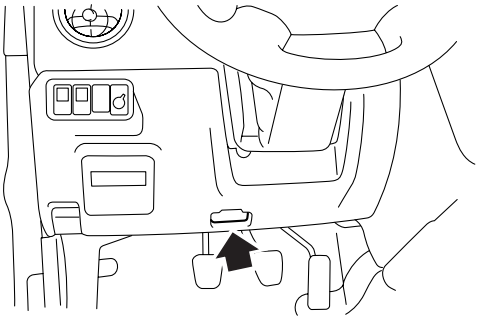
Registering the Injector Code

It is possible to register display, read, and save the injector code for vehicles with a diesel engine.

Getting Ready

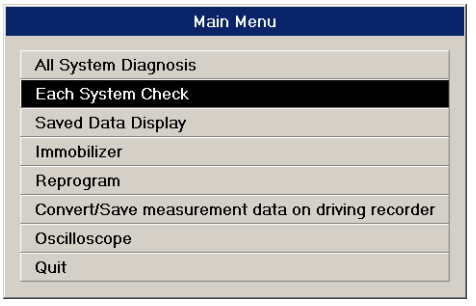
1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



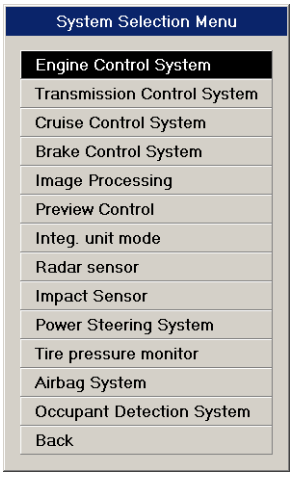
SMU-00113

3. Use the USB cable to connect the SDI to the PC.
4. Turn on the vehicle's ignition switch.
5. Double-click the SSMIII icon on the PC screen to start up the application.
6. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



SMU-00600

7. On the System Selection Menu, select [Engine Control System] and then press the Enter key or left click with the mouse.

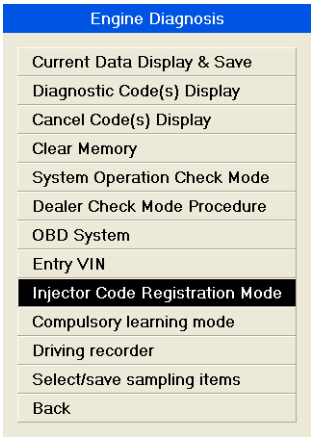


SMU-00665

8. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.

SMU-01047

9. From the list of fault diagnosis items, select [Injector Code Registration Mode] and then press the Enter key or left-click with the mouse.

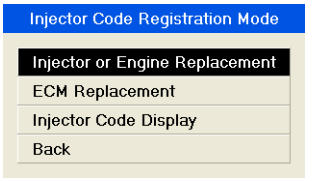


SMU-01055

Injector or Engine Replacement

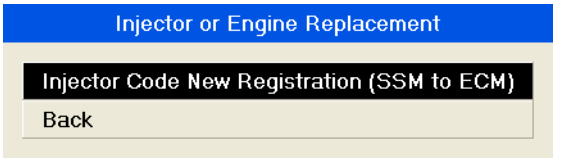
IMPORTANT:
At the time of injector or engine replacement, [Injector or Engine Replacement] must be executed.

1. Select [Injector or Engine Replacement] from the item selection screen and press the [Enter] key or click the left mouse button.



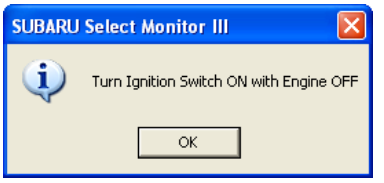
SMU-01056

2. This displays the dialog box shown below. Select [Injector Code New Registration (SSM to ECM)] and then press the Enter key or left-click with the mouse.



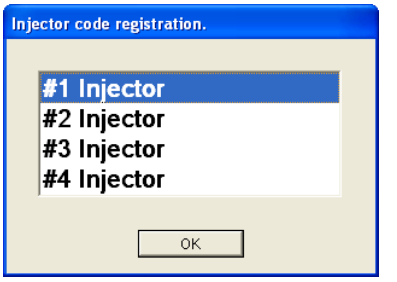
SMU-01057

3. As instructed by the display message, turn on the vehicle's ignition switch (make sure that the engine is currently not running).
Click the [OK] button to go to the next screen.



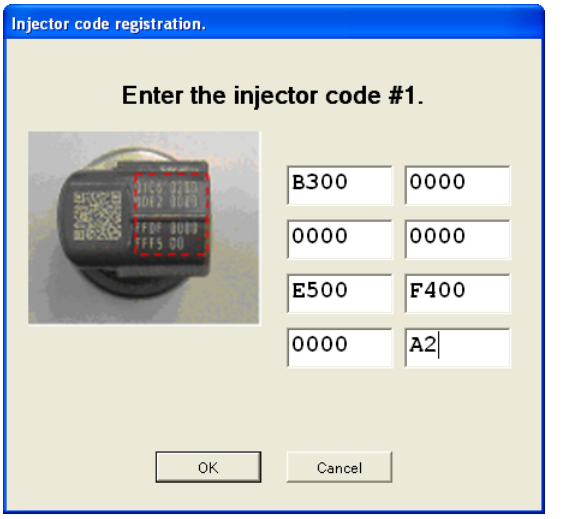
SMU-01058

4. Select the injector for which setting is to be performed from the displayed selection screen and click the [OK] button.



SMU-01059

5. The injector code input screen is displayed. Enter the injector code and click the [OK] button.

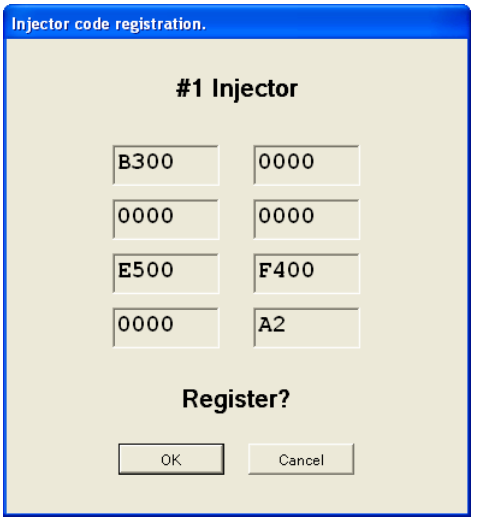


SMU-01060

NOTE:
- Enter four digits into each input column (two digits only for the input column at the right bottom) for a total of 30 digits.
- The injector code is listed on the top of the injector.

SMU-01061

6. The screen for confirmation of the injector code registration contents is displayed. Confirm the registration contents and click the [OK] button.



SMU-01062

7. When registration has been completed normally, the registration completion screen is displayed. To continue registration, click the [OK] button and perform the registration work of steps 4 to 6 again.
To end registration, click [Cancel] and go to step 8.

SMU-01063

8. When the dialog box shown below appears, click the [OK] button.

SMU-01064

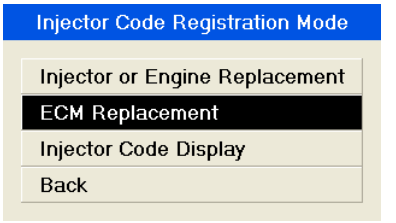
At the time of ECM replacement

IMPORTANT:
At the time of ECM replacement, [Read Injector Code (ECM to SSM)] and [Register the reading code (SSM to ECM)] must be executed.

Read Injector Code

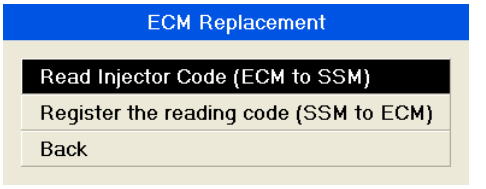
The presently registered injector code can be read in and can be saved.

1. Select [ECM Replacement] from the selection screen and press the [Enter] key or click the left mouse button.



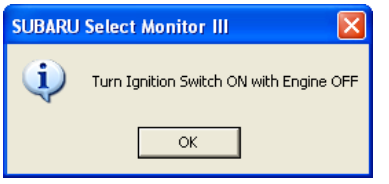
SMU-01065

2. This displays the dialog box shown below. Select [Read Injector Code (ECM to SSM)] and then press the Enter key or left-click with the mouse.



SMU-01066

3. As instructed by the display message, turn on the vehicle's ignition switch (make sure that the engine is currently not running).
Click the [OK] button to go to the next screen.

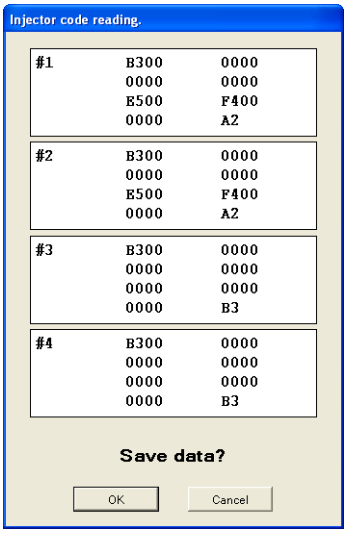


SMU-01058

4. The screen for confirmation of injector code reading is displayed. Click the [OK] button.

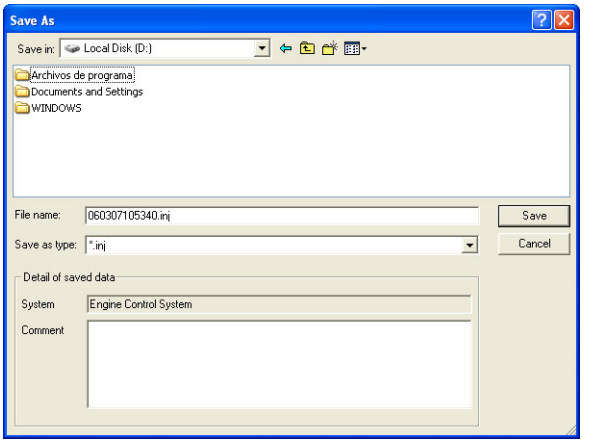
SMU-01067

5. The injector code is displayed. Confirm the contents to be saved and click the [OK] button.



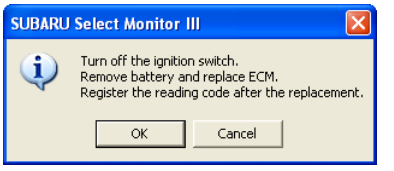
SMU-01068

6. This causes the sampled data save dialog box to appear. The name of the data file being saved is generated automatically in accordance with the current time and date. If you want to use the generated file name as-is, click the dialog box [Save] button. If you want to change to a different file name, type in the name you want.



SMU-01069

7. The following dialog box is displayed. Confirm the screen instructions and click the [OK] button.

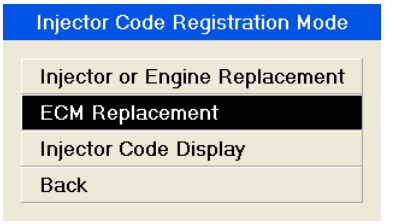


SMU-01070

Register the reading code

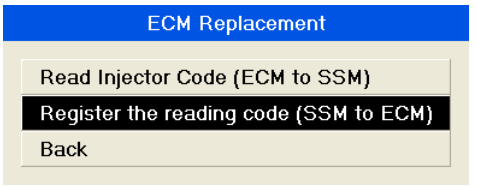
The saved injector code can be registered.

1. Select [ECM Replacement] from the item selection screen and press the [Enter] key or click the left mouse button.



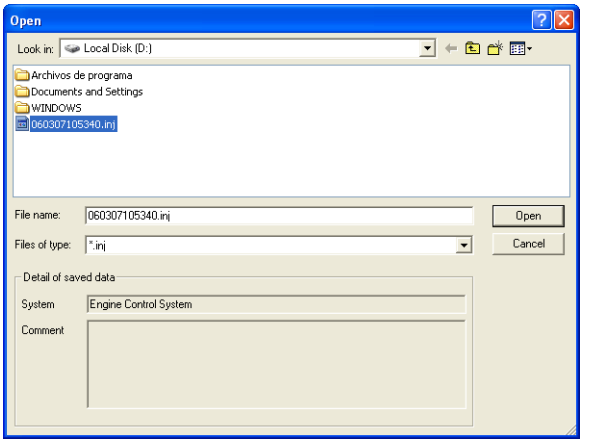
SMU-01065

2. This displays the dialog box shown below. Select [Register the reading code (SSM to ECM)] and then press the Enter key or left-click with the mouse.



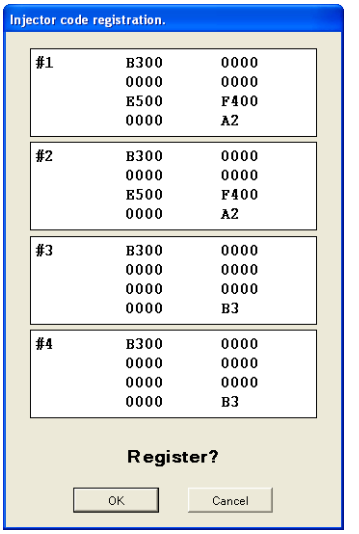
SMU-01071

3. The dialog box with a list of saved data files is displayed.
After selecting “Files of type”, designate the file you need, and press the Enter key or click the [Open] button.



SMU-01072

4. The injector code is displayed. Confirm the contents to be registered and click the [OK] button.



SMU-01073

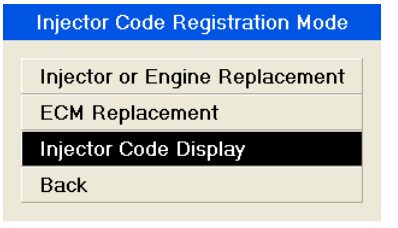
5. The screen shown below will appear if registration ends normally.Click the [OK] button.

SMU-01074

Displaying the Injector Code

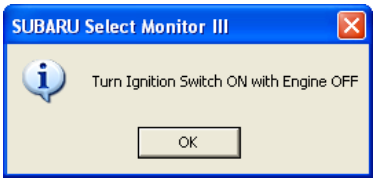
The presently registered injector code can be confirmed.

1. Select [Injector Code Display] from the item selections screen and press the [Enter] key or click the left mouse button.



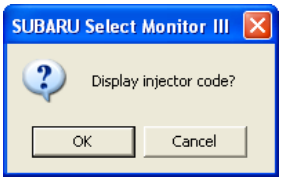
SMU-01075

2. As instructed by the display message, turn on the vehicle's ignition switch (make sure that the engine is currently not running).
   Click the [OK] button to go to the next screen.



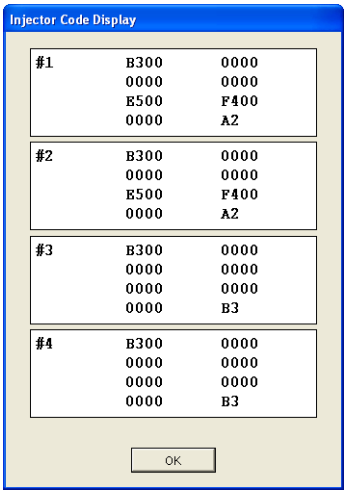
SMU-01058

3. When the dialog box shown below appears, click the [OK] button.



SMU-01090

4. The injector code is displayed. Confirm the contents to be registered and click the [OK] button.



SMU-01102

Driving Recorder (SDR)

In cases when the trouble that is difficult to be reproduced is occurring, the driving recorder can be used to sample vehicle data continuously and to save data. Pressing the trigger switch will save data starting from the point 10 minutes before the switch is pressed, up to the point five seconds after the switch is pressed. Saved data can be displayed for analysis.
The following are the steps for sampling and analysing data.
1) Create a special SDR setting file.
2) Sample the vehicle data.
3) Save the sampled data.
4) Open and analyse the saved data.

IMPORTANT:
When the driving recorder function is used for measuring, driving is done with the diagnosis cable connected to the data link connector, and care is required so that there is no obstacle for driving. Also, the safety considerations for driving and measuring the car with attached cable must be explained sufficiently to the customer, and measuring shall be done after approval by the customer.

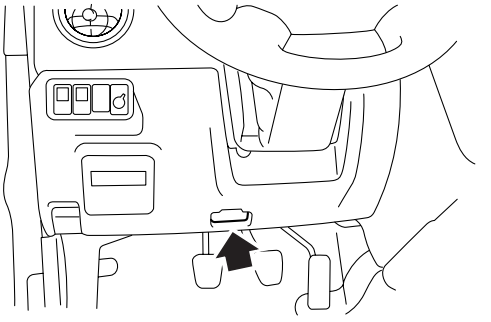
NOTE:
- A CF card with the CF application installed is required in order to sample data using the driving recorder. Prepare a CF card before starting a driving recorder operation.
- Be sure to turn off SDI power before installing a CF card into or removing a CF card from its card slot. Inserting or removing a CF card while SDI power is turned on runs the risk of damaging CF card contents.
- When using this function, always take measurements after you have created a setting file for the desired vehicle model. Measurement is not possible if the setting file stored in the CF card is for another vehicle model.

Creating an SDR Setting File

Use the following procedure to create a setting file which selected the items to be sampled on the CF card.

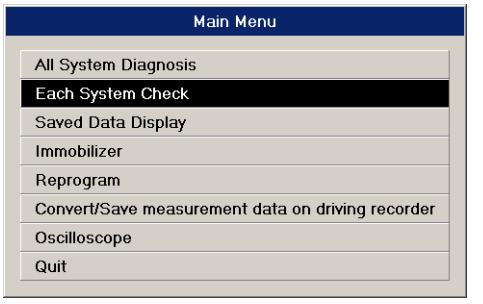
1. Prepare the SDI, diagnosis cable, the USB cable, a PC with the PC application installed, and a CF card with the CF application installed.
2. Insert the CF card into the CF1 card slot of the SDI.
3. Connect the main connector of the diagnosis cable to the diagnosis communication connector of the SDI.
4. Connect the vehicle connector of the diagnosis cable to the vehicle's data link connector, and confirm that the PWR LED of the SDI lights.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



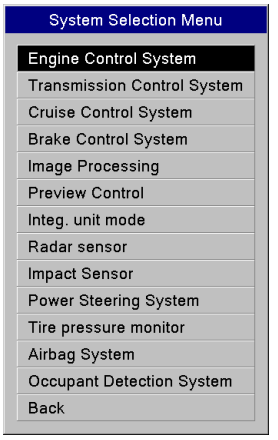
SMU-00113

5. Use the USB cable to connect the SDI to the PC.
6. Turn on the vehicle's ignition switch.
7. Double-click the SSMIII icon on the PC screen to start up the application.
8. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



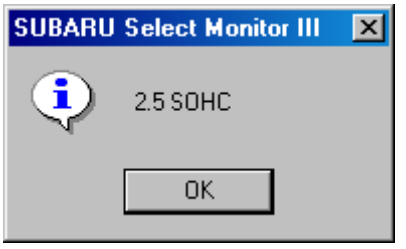
SMU-00600

9. On the System Selection Menu, select [Engine Control System] and then press the Enter key or left-click with the mouse.



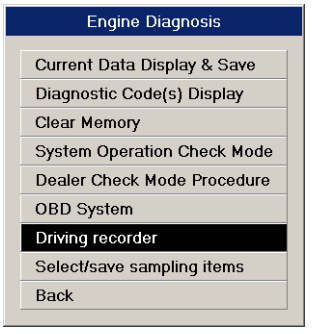
SMU-00474

10. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.



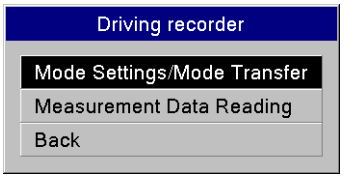
SMU-00475

11. From the list of fault diagnosis items, select [Driving recorder] and then press the Enter key or left-click with the mouse.



SMU-00609

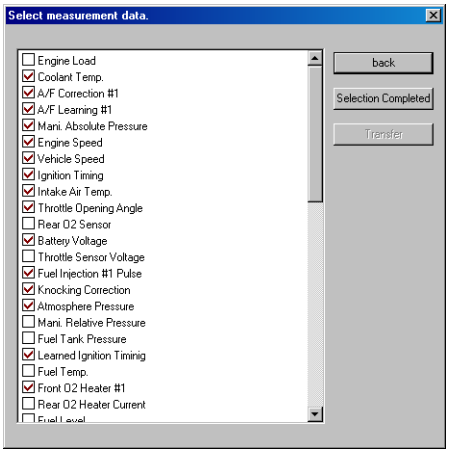
12. On the Driving recorder menu, select {Mode Settings/Mode Transfer} and then press the Enter key or left-click with the mouse.



SMU-00477

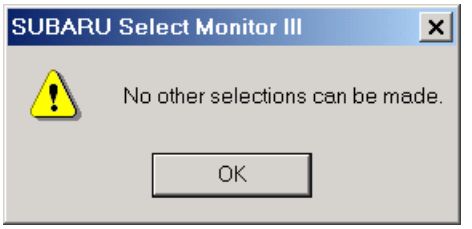
13. This displays a measurement item selection screen.

Boxes of recommended items for sampling are checked as initial settings in the screen. If you wish to add or delete some items, manipulate the boxes of applicable items. After configuring all of the settings, click the [Selection Completed] button.



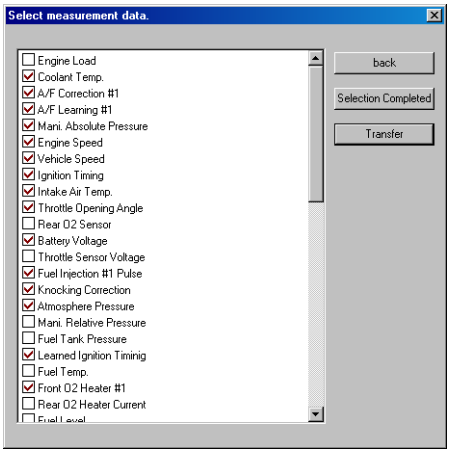
SMU-00478

NOTE:
If the message dialog box shown below appears while you are selecting data items, it means that the limit on the number of selectable data items has been reached. Selection of further data items is not possible after this message appears. To select other items, deselect the check boxes next to the currently selected (checked) items, and then select the new items.



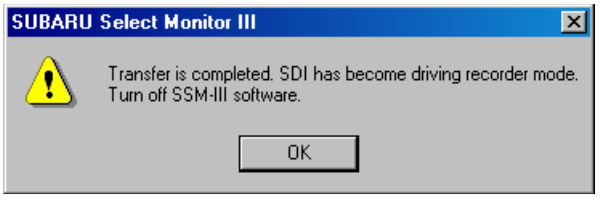
SMU-00154

14. After clicking the [Selection Completed] button, click the [Transfer] button.



SMU-00479

15. The message shown below will appear after the SDR setting file is created on the CF card in the SDI.



SMU-00480

NOTE:
If any message other than the one shown above appears, perform the operation as instructed by the message to create the setting file.

Saving SDR Data to CF Card

SDR data can be saved to the CF card by pressing the [TRG] key while sampling is being performed or by pressing the trigger switch of the optional remote box.

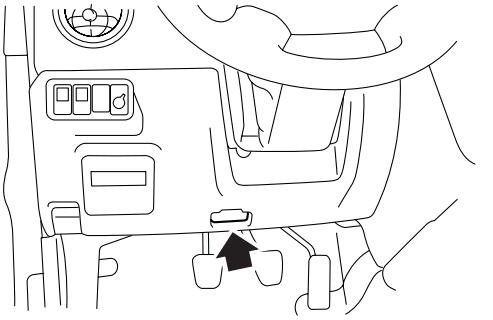
NOTE:
- Be sure to turn off SDI power before installing a CF card into or removing a CF card from its card slot. Inserting or removing a CF card while SDI power is turned on runs the risk of damaging CF card contents.
- Pressing the [TRG] key will save data starting from the point 10 minutes before the key is pressed, up to the point five seconds after the key is pressed.

1. Insert the CF card that contains the SDR setting file into the CF1 card slot of the SDI.

2. Connect the main connector of the diagnosis cable to the diagnosis communication connector of the SDI.

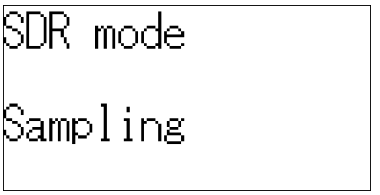
3. Connect the vehicle connector of the diagnosis cable to the vehicle's data link connector, and confirm that the PWR LED of the SDI lights.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



SMU-00113

4. After the SDI is turned on, sampling will start automatically and the screen shown below will appear on the SDI.

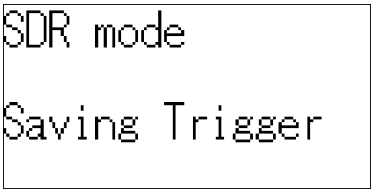


SMU-00548

NOTE:
In case that the SDI operates as a driving recorder, “SDR mode” is shown on the screen.

5. When sampling reaches the point you want to save, hold down the SDI [TRG] key or the trigger switch of the remote box for at least one second.

   Pressing the [TRG] key or the trigger switch causes SDR data to be saved on the CF card. The message shown below appears on the SDI display when SDR data is saved on the CF card.



SMU-00549

6. Sample restarts automatically after the SDR data is saved to the CF card.

   If you want to stop sampling, disconnect the diagnosis cable from the vehicle’s data link connector, or hold down both the [MENU] key and the [DOWN] key of the SDI for at least two seconds in order to turn off the SDI.

NOTE:
To sample engine start data without Remote Box, turn the ignition switch to the ON position and keep it for a while (The engine is turned off at this moment). When the message “Sampling” appears on the SDI display, start the engine to sample the data.

Saving SDR Data to PC

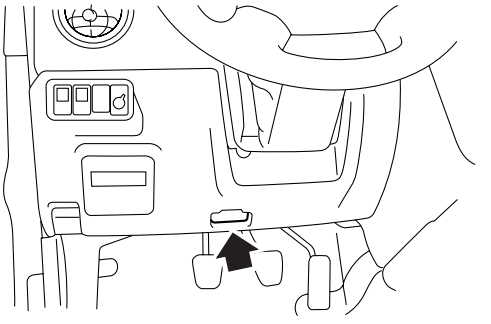
Save SDR data stored in a CF card to hard disk of your PC.
SDR data can be read from a CF card in the card slot of the SDI or in the card slot of a PC.

NOTE:
Be sure to turn off SDI power before installing a CF card into or removing a CF card from its card slot. Inserting or removing a CF card while SDI power is turned on runs the risk of damaging CF card contents.

To read data from the CF card slot of the SDI

1. Insert the CF card that contains the SDR data into the CF1 card slot of the SDI.
2. Connect the main connector of the diagnosis cable to the diagnosis communication connector of the SDI.
3. Connect the vehicle connector of the diagnosis cable to the vehicle’s data link connector, and confirm that the PWR LED of the SDI lights.

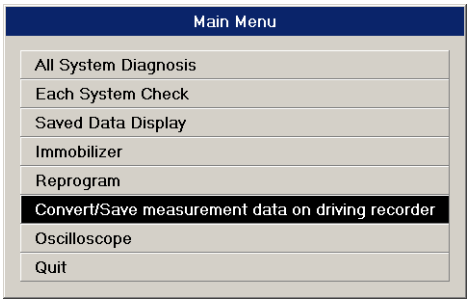
NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle’s ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



SMU-00113

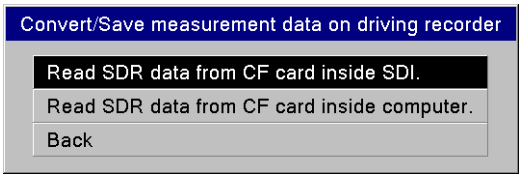
4. Use the USB cable to connect the SDI to the PC.
5. Turn on the vehicle’s ignition switch.
6. Double-click the SSMIII icon on the PC screen to start up the application.

7. On the Main Menu that appears on the display, select [Convert/Save measurement data on driving recorder] and then press the Enter key or left-click with the mouse.



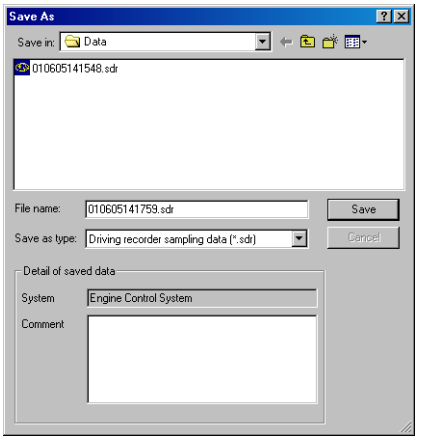
SMU-00610

8. On the Convert/Save measurement data on driving recorder screen that appears, select {Read SDR data from CF card inside SDI.} and then press the [Enter] key or left-click with the mouse.



SMU-00485

9. This causes the sampled data save dialog box to appear. The name of the data file being saved is generated automatically in accordance with the current time and date. If you want to use the generated file name as-is, click the dialog box [Save] button. If you want to change to a different file name, type in the name you want.



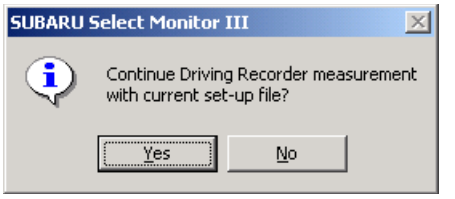
SMU-00700

NOTE:
- Sample data files are saved in the Data folder where the PC application is installed. To change to another storage location, specify the location you want in the Save in box of the save data dialog box.
- The Comment box of the Save As dialog box can be used to save general comments associated with the data or file.

10. This causes the message shown below to appear.

    To continue using the current setting file for sampling, click the [Yes] button.

    To delete the current setting file and stop sampling, click the [No] button.

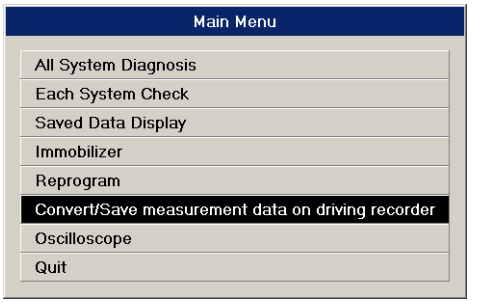


SMU-00486

To read data from a card slot of the PC

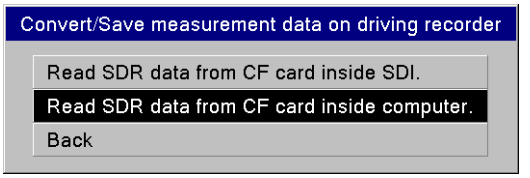
NOTE:
You will need to purchase a PC card adapter if your PC does not have built-in CF card slot.

1. Double-click the SSMIII icon on the PC screen to start up the application.
2. On the Main Menu that appears on the display, select [Convert/Save measurement data on driving recorder] and then press the Enter key or left-click with the mouse.



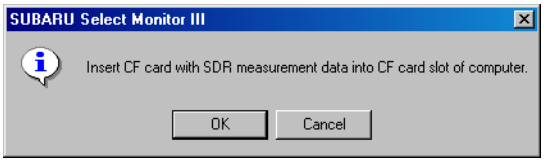
SMU-00610

3. On the Convert/Save measurement data on driving recorder screen that appears, select {Read SDR data from CF card inside computer.} and then press the [Enter] key or left-click with the mouse.



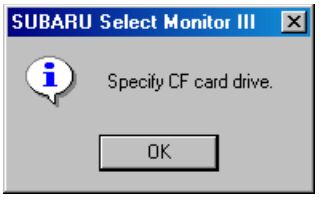
SMU-00490

4. Insert the CF card that contains the SDR sample data into the card slot of the PC. Click the [OK] button.



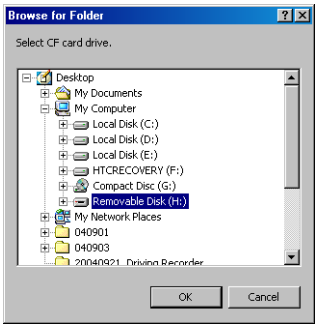
SMU-00491

5. When the dialog box shown below appears, click the [OK] button.



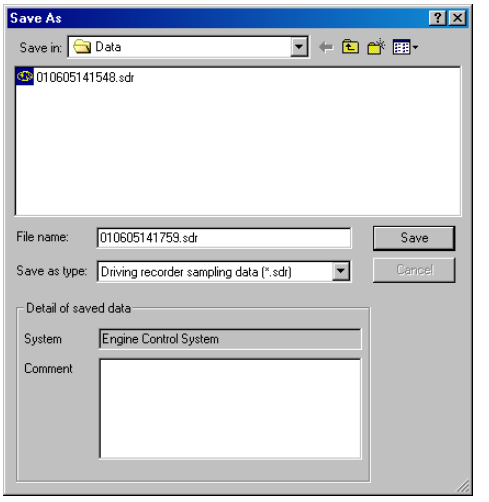
SMU-00492

6. Select the drive where the CF card is located, and then click the [OK] button.



SMU-00493

7. This causes the sampled data save dialog box to appear. The name of the data file being saved is generated automatically in accordance with the current time and date. If you want to use the generated file name as-is, click the dialog box [Save] button. If you want to change to a different file name, type in the name you want.



SMU-00700

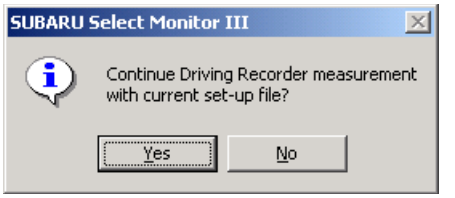
NOTE:

- Sample data files are saved in the Data folder where the PC application is installed. To change to another storage location, specify the location you want in the Save in box of the save data dialog box.
- The Comment box of the Save As dialog box can be used to save general comments associated with the data or file.

8. This causes the message shown below to appear.

   To continue using the current setting file for sampling, click the [Yes] button.

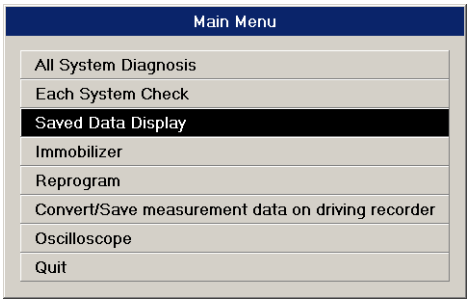
   To delete the current setting file and stop sampling, click the [No] button.



SMU-00486

Opening and analyzing saved data

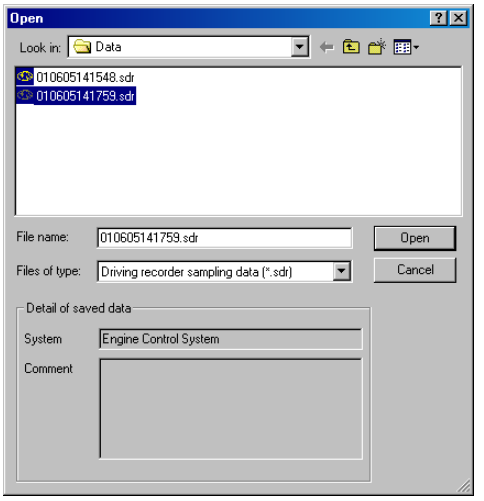
1. Double-click the SSMIII icon on the PC screen to start up the application.
2. On the Main Menu that appears on the display, select [Saved Data Display] and then press the Enter key or left-click with the mouse.



SMU-00602

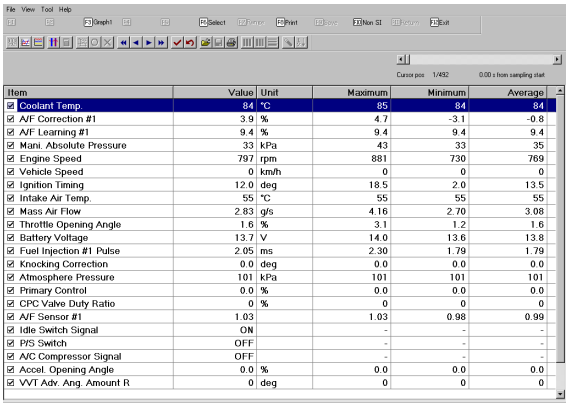
3. This displays a dialog box with a list of saved files.

   After selecting “Driving recorder sampling data (*.sdr)” for “Files of type”, select the file you want, and then press the [Enter] key or click the [Open] button.



SMU-00701

This recalls the data in the file and displays it on the Digital Data Screen.



Item	Value	Unit	Maximum	Minimum	Average
Coolant Temp.	84	°C	85	84	84
A/F Correction #1	3.9	%	4.7	-3.1	-0.8
A/F Learning #1	9.4	%	9.4	9.4	9.4
Mani. Absolute Pressure	33	kPa	43	33	35
Engine Speed	797	rpm	881	730	769
Vehicle Speed	0	km/h	0	0	0
Ignition Timing	12.0	deg	18.5	2.0	13.5
Intake Air Temp.	55	°C	55	55	55
Mass Air Flow	2.83	g/s	4.16	2.70	3.08
Throttle Opening Angle	1.6	%	3.1	1.2	1.6
Battery Voltage	13.7	V	14.0	13.6	13.8
Fuel Injection #1 Pulse	2.05	ms	2.30	1.79	1.79
Knocking Correction	0.0	deg	0.0	0.0	0.0
Atmosphere Pressure	101	kPa	101	101	101
Primary Control	0.0	%	0.0	0.0	0.0
CPC Valve Duty Ratio	0	%	0	0	0
A/F Sensor #1	1.03		1.03	0.98	0.99
Idle Switch Signal	ON		-	-	-
P/S Switch	OFF		-	-	-
A/C Compressor Signal	OFF		-	-	-
Accel. Opening Angle	0.0	%	0.0	0.0	0.0
VVT Adv. Ang. Amount R	0	deg	0	0	0

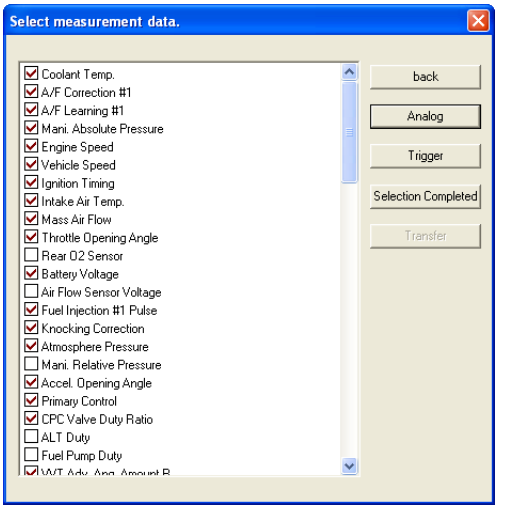
SMU-00596

NOTE:
The operations for this screen are identical to those described under “Saved Data Display”. See “Saved Data Display” for more information.

Trigger Function

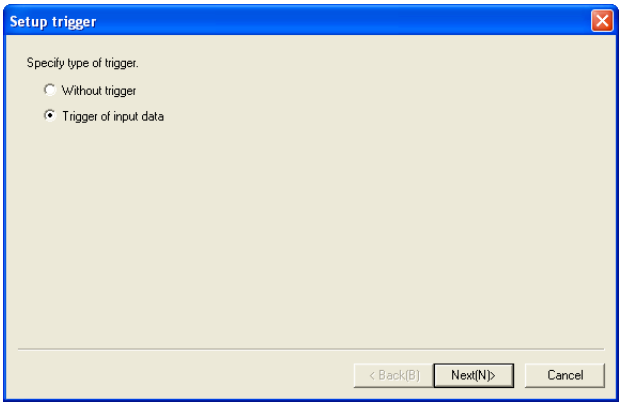
It is possible to set a trigger in advance for a sampling item, to detect the trigger automatically, and to save the sampling data automatically.
Trigger setup is performed at the time of creation of a setup file for a selected sampling item.
There is a trigger setting method: “Trigger of input data”, where a trigger is set in advance to a sampling item for ECM data.

1. Display the sampling item selection screen, and click the “Trigger” button after item selection.



SMU-00897

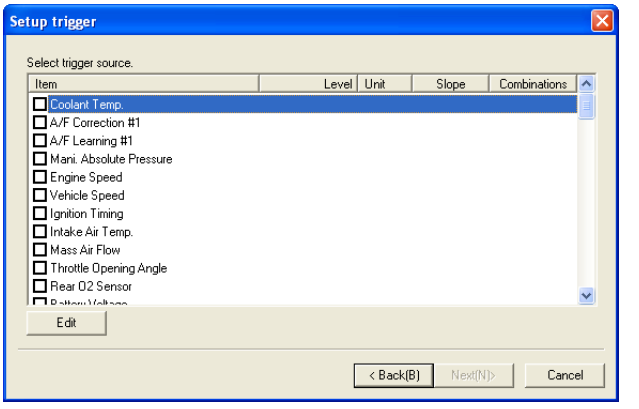
2. The Setup Trigger screen is displayed. Select the “Trigger of input data” and click the [Next] button.



SMU-00898

3. Specify the trigger source.

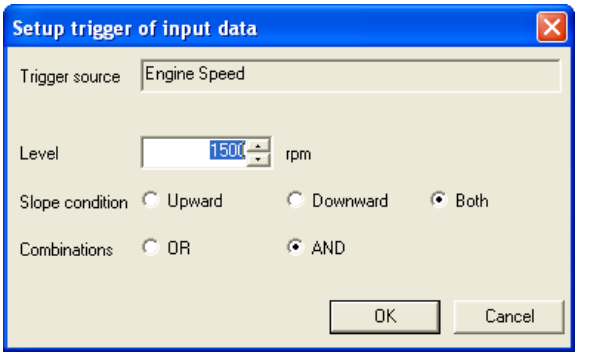
In the list, select the checkbox next to the item whose setting you want to change, or double-click the item.



SMU-00899

4. This displays the Setup trigger of input data screen. Configure the settings and then click the [OK] button.

When a sampling item is not switch input



SMU-00900

1) Level

This specifies the trigger level, the value that detects triggers. You can input a value directly into the box or you can use its up and down arrows to change the setting. The setting value is limited to values that can actually be obtained. If you type in a value that cannot be obtained, the software will automatically change it to the nearest allowable value.

2) Slope condition

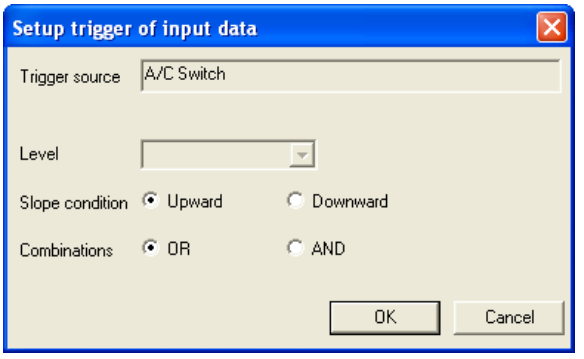
This setting specifies the condition for trigger detection when the sample data values reach the trigger level. When [Both] is selected, a trigger is detected when either a Upward or Downward condition is first satisfied.

3) Combinations

When there are multiple triggers, these settings can be used to configure combinations.

NOTE:
If you set the trigger on multiple items, unify the selection in either “OR” or “AND”.

When a sampling item is switch input



SMU-00901

1) Level

This specifies the trigger level, the value that detects triggers. The setting is configured by button operation. This setting cannot be selected for certain sampling items.

2) Slope condition

This setting specifies the data condition for trigger detection when the sample data values reach the trigger level.

Selecting [Upward] detects a trigger at the OFF→ON point.

Selecting [Downward] detects a trigger at the ON→OFF point.

Selecting [Both] detects a trigger at either the OFF→ON point or the ON→OFF point, whichever occurs first.

3) Combinations

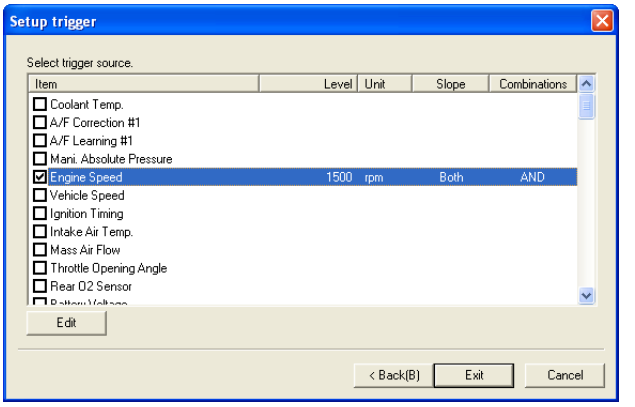
When there are multiple triggers, these settings can be used to configure Combinations.

NOTE:
If you set the trigger on multiple items, unify the selection in either “OR” or “AND”.

5. Checkboxes of the channels to which you set triggers are checked.

If you want to configure multiple triggers, repeat steps 3 and 4.

After configuring all of the triggers you want, click the [Exit] button.

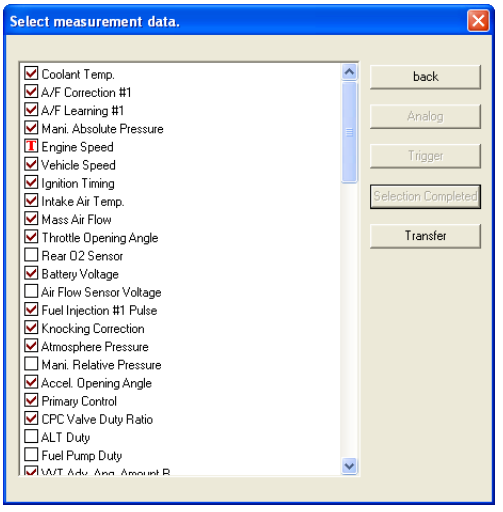


SMU-00902

NOTE:
- To change a trigger setting, select the desired item and then click the [Edit] button to display the Setup trigger of input data screen.
- To exclude the setting of an item that is currently configured for a trigger, clear the check box of the applicable item.
- If the message dialog box shown below appears while you are configuring an item setting, it means that the limit on the number of selectable items has been reached. Selection of further data items is not possible after this message appears. To select other items, uncheck the unnecessary checked items of sampling items (step 1) or setup trigger items (step 3), and then select another item to which you want to assign a trigger.

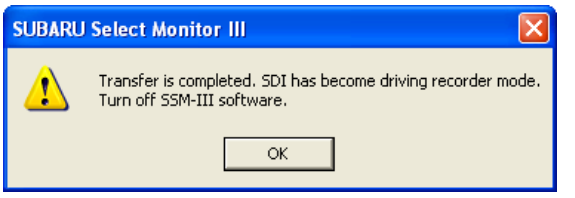
SMU-00903

6. Assigning an trigger to an item causes “T” to appear in item’s checkbox. After clicking the [Selection Completed] button, click the [Transfer] button.



SMU-00904

7. The message shown below will appear after the SDR setting file is created on the CF card in the SDI.



SMU-00905

NOTE:
If any message other than the one shown above appears, perform the operation as instructed by the message to create the setting file.

ECM Analog Simultaneous Measurement (SDR)

Also in driving recorder, analog data and ECM data can be sampled simultaneously using the Pulse/Analog Kit (option).
The following are the steps for sampling and analysing data.

1) Create a special SDR setting file.
2) Sample the vehicle data.
3) Save the sampled data.
4) Open and analyse the saved data.

Basic procedure of ECM Analog Simultaneous Measurement in driving recorder is the same as that in driving recorder. Therefore, this section describes only “Creating a special SDR setting file” and “Sampling the vehicle data”. For other procedures, see the “Driving Recorder (SDR)”.

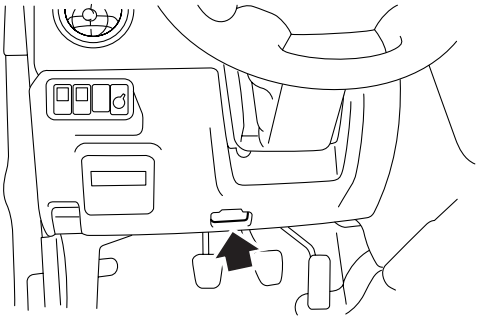
NOTE:
- This function cannot be used if the pulse/analog cartridge is not installed.
- See “Analog Sampling” for handling precautions about Pulse/Analog Kit, how to install the pulse/analog cartridge in the SDI and how to upgrade the SDI firmware.
- A CF card with the CF application installed is required in order to sample data using this function. Prepare a CF card before starting an operation.
- Be sure to turn off SDI power before installing a CF card into or removing a CF card from its card slot. Inserting or removing a CF card while SDI power is turned on runs the risk of damaging CF card contents.
- When using this function, always take measurements after you have created a setting file for the desired vehicle model. Measurement is not possible if the setting file stored in the CF card is for another vehicle model.

Creating an SDR Setting File

Use the following procedure to create a setting file which selected the items to be sampled on the CF card.

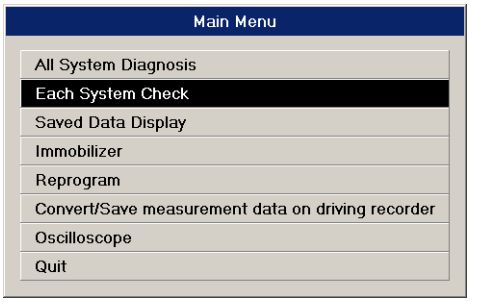
1. Prepare the SDI, diagnosis cable, the USB cable, a PC with the PC application installed, and a CF card with the CF application installed.
2. Insert the CF card into the CF1 card slot of the SDI.
3. Connect the main connector of the diagnosis cable to the diagnosis communication connector of the SDI.
4. Connect the vehicle connector of the diagnosis cable to the vehicle's data link connector, and confirm that the PWR LED of the SDI lights.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



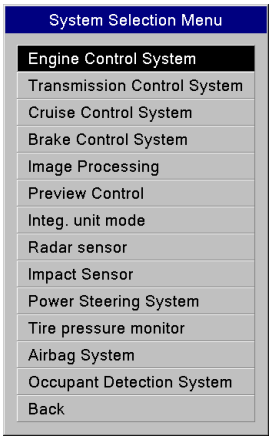
SMU-00113

5. Use the USB cable to connect the SDI to the PC.
6. Turn on the vehicle's ignition switch.
7. Double-click the SSMIII icon on the PC screen to start up the application.
8. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



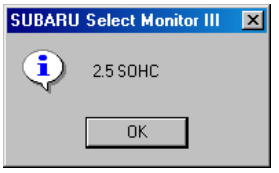
SMU-00600

9. On the System Selection Menu, select [Engine Control System] and then press the Enter key or left-click with the mouse.



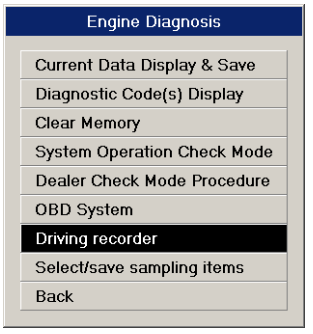
SMU-00474

10. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.



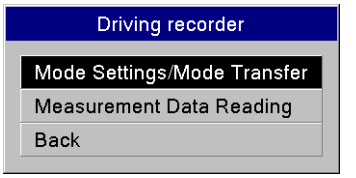
SMU-00475

11. From the list of fault diagnosis items, select [Driving recorder] and then press the Enter key or left-click with the mouse.



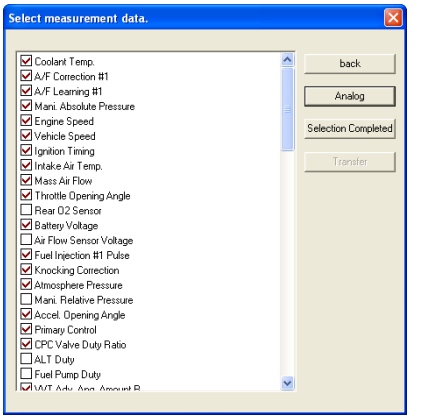
SMU-00609

12. On the Driving recorder menu, select {Mode Settings/Mode Transfer} and then press the Enter key or left-click with the mouse.



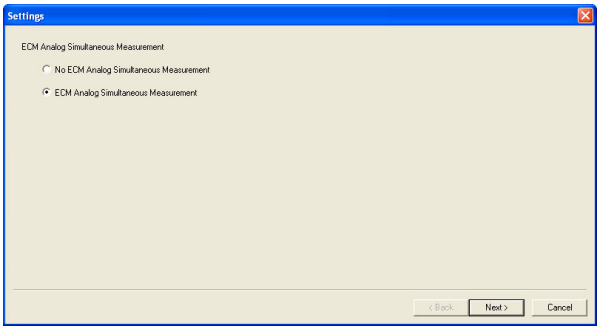
SMU-00477

13. This displays a measurement item selection screen, click the [Analog] button.



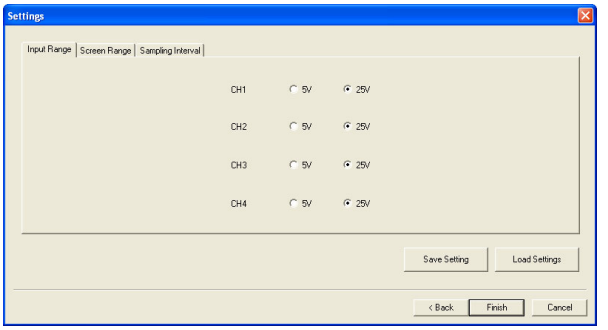
SMU-00831

14. On the setup screen that appears, select “ECM Analog Simultaneous Measurement” and click the [Next] button.



SMU-00816

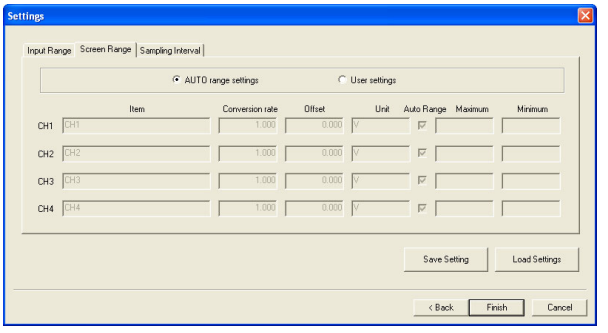
*15.*Select “Input Range” tab to configure the input range of analog data. Configure the desired range.



SMU-00832

NOTE:
For details about input range settings, see “Configuring Analog Sampling Settings” under “Analog Sampling”.

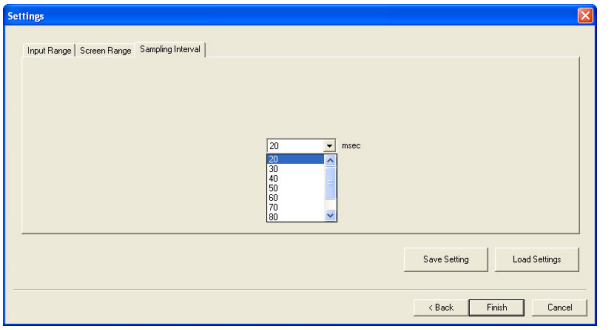
*16.*Select “Screen Range” tab to configure the screen range of analog data. Configure the desired range.



SMU-00833

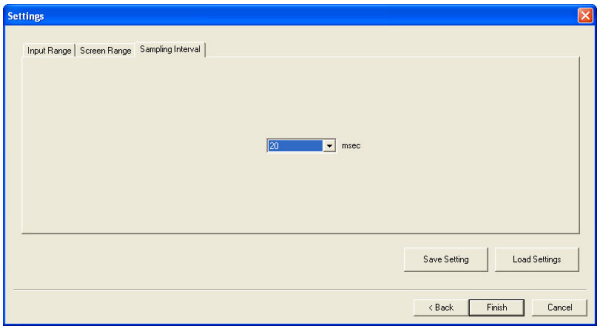
NOTE:
For details about screen range settings, see “Configuring Analog Sampling Settings” under “Analog Sampling”.

*17.*Select “Sampling Interval” tab to configure the sampling interval of analog data. Select the desired interval from drop-down menu.



SMU-00834

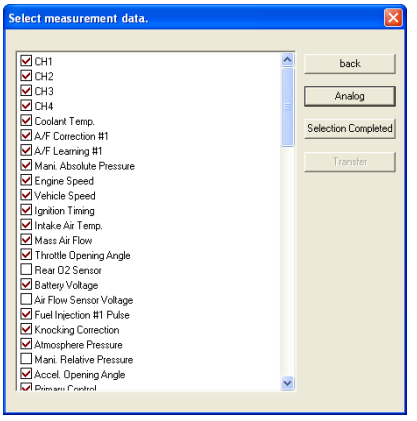
*18.*After configuring the settings of all tabs, click the [Finish] button.



SMU-00835

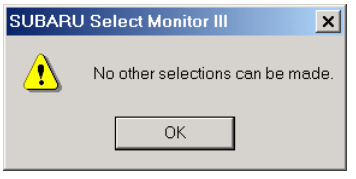
NOTE:
- You can save the settings of Input Range, Screen Range and Sampling Interval as a setup file, and load the saved setup file. This can be performed using the same procedures as those described in “Configuring Analog Sampling Settings” under “Analog Sampling”. For this procedures, see the appropriate item.
- When loading a setup file, select the file which displays “ECM Analog Simultaneous Measurement” in System field in dialog box.

*19.*This displays a measurement item selection screen with analog sampling item. Boxes of recommended items for ECM data sampling are checked as initial settings in the screen. If you wish to add or delete some items, manipulate the boxes of applicable items. Also, all analog sampling items are selected. Take the check marks off as required. After selecting the sampling items, click the [Selection Completed] button.



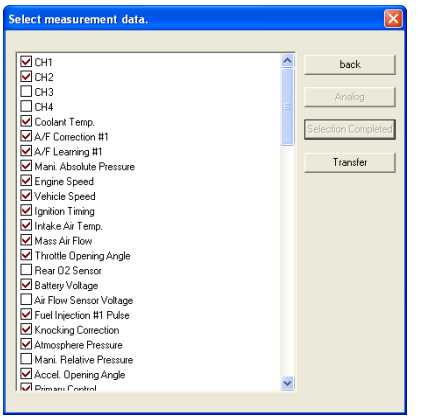
SMU-00836

NOTE:
If the message dialog box shown below appears while you are selecting data items, it means that the limit on the number of selectable ECM data items has been reached. (Not involved with the number of selected items for analog data) Selection of further ECM data items is not possible after this message appears. To select other items, deselect the check boxes next to the currently selected (checked) items of ECM data, and then select the new items.



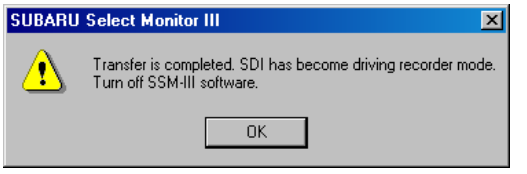
SMU-00154

*20.*After clicking the [Selection Completed] button, click the [Transfer] button.



SMU-00837

*21.*The message shown below will appear after the SDR setting file is created on the CF card in the SDI.



SMU-00480

NOTE:
If any message other than the one shown above appears, perform the operation as instructed by the message to create the setting file.

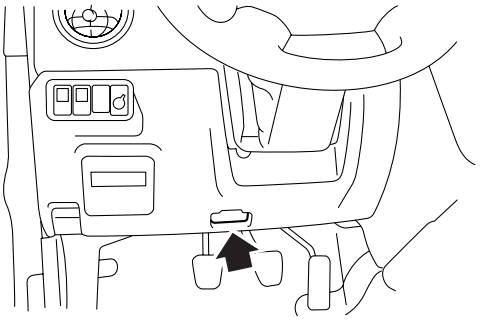
Saving SDR Data to CF Card

SDR data can be saved to the CF card by pressing the [TRG] key while sampling is being performed or by pressing the trigger switch of the optional remote box.

NOTE:
- Be sure to turn off SDI power before installing a CF card into or removing a CF card from its card slot. Inserting or removing a CF card while SDI power is turned on runs the risk of damaging CF card contents.
- Pressing the [TRG] key will save data starting from the point 10 minutes before the key is pressed, up to the point five seconds after the key is pressed.

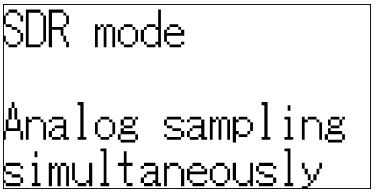
1. Prepare the SDI, diagnosis cable, USB cable, a CF card with the SDR setting file is written, the pulse/analog box, and the pulse/analog probe.
2. Insert the CF card that contains the SDR setting file into the CF1 card slot of the SDI.
3. Connect the pulse/analog box to the SDI.
4. Connect the pulse/analog probe to the pulse/analog box.
5. Connect the pulse/analog probe to the location where you want to sample.
6. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



SMU-00113

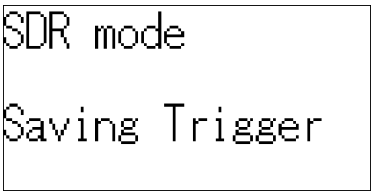
7. After the SDI is turned on, sampling will start automatically and the screen shown below will appear on the SDI.



SMU-00838

NOTE:
In case that the SDI operates as a driving recorder, “SDR mode” is shown on the screen.

8. When sampling reaches the point you want to save, hold down the SDI [TRG] key or the trigger switch of the remote box for at least one second. Pressing the [TRG] key or the trigger switch causes SDR data to be saved on the CF card. The message shown below appears on the SDI display when SDR data is saved on the CF card.



SMU-00549

9. Sample restarts automatically after the SDR data is saved to the CF card.

   If you want to stop sampling, disconnect the diagnosis cable from the vehicle's data link connector, or hold down both the [MENU] key and the [DOWN] key of the SDI for at least two seconds in order to turn off the SDI.

NOTE:
To sample engine start data without Remote Box, turn the ignition switch to the ON position and keep it for a while (The engine is turned off at this moment). When the message “Analog sampling simultaneously” appears on the SDI display, start the engine to sample the data.

Saving SDR Data to PC

The procedure to save the SDR data is the same as that described in “Driving Recorder (SDR)”. See “Saving SDR Data to PC” under “Driving Recorder (SDR)” for the procedure.

Opening and analyzing saved data

The procedure to open and analyze saved data is the same as that described in “Driving Recorder (SDR)”. See “Opening and analyzing saved data” under “Driving Recorder (SDR)” for the procedure.

Remote Box

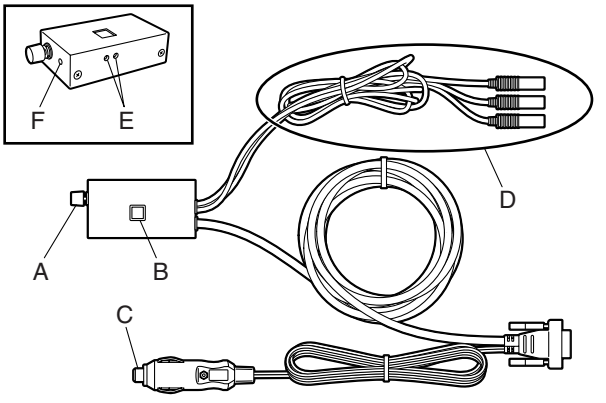
Using the optional remote box allows you turn the SDI on, detect trigger signals and sample output signals from the internal G sensor.

NOTE:
The remote box is optional, and is not included in standard with the SSMIII Kit.

Handling Precautions

- When power is being supplied to the SDI by the diagnosis cable or the AC adaptor, power is supplied to the remote box even if the SDI is off (PWR LED not lit). For this reason, when connecting or disconnecting the remote box, be sure to completely disengage the power to SDI. Connecting or disconnecting the remote box with the power still supplied to SDI can damage the SDI.
- Never try to disassemble the remote box.
- This device is not water resistant. Never allow it to be splashed with water, oil, grease, etc.

Names of Parts



SMU-00702

A: Trigger switch
B: POWER ON button
C: Cigar plug
D: Probe
E: Bias adjustment hole
F: LED light

Connecting to the SDI

1. Disconnect the diagnosis cable and AC adaptor from the SDI.

IMPORTANT:
Completely disengage the power to the SDI.

2. Connect the remote box to the remote box connector of the SDI.

Remote Box Functions

Startup the SDI

The SDI can be turned on without pressing the PWR key of the SDI by performing the following operation.
1) Switch operation
Pressing the POWER ON button (blue) on the remote box turns the SDI on.

2) Ignition signal detection
If you connect the cigar plug of the remote box to the vehicle, and set the ignition switch to accessory (ACC), the ignition signal is detected to automatically turn the SDI on.

3) Acceleration detection
If you place the remote box in the door pocket or other receptacle, and then open or close the door, the output voltage of the X- or Y-axis of the G sensor built into the remote box is detected to automatically turn the SDI on.

NOTE:
This function is important when the driving recorder function is used to sample data at the engine is started.

Trigger Signal Output

A trigger can be applied in the same way as pressing the [TRG] key on the SDI by pressing the trigger switch on the remote box in the Driving Recorder Mode.

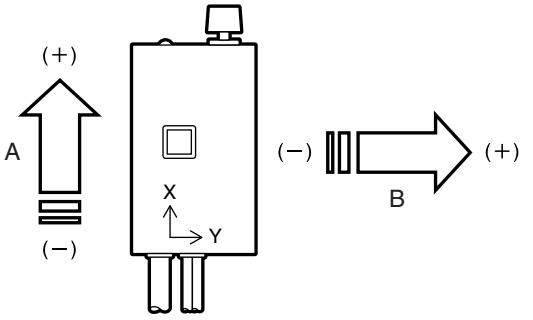
G Sensor Analog Output

The output voltage of the X- and Y-axis of the G sensor built into the remote box can each be sampled independently.

Sampling of G Sensor Analog Output

1. Prepare the SDI, remote box, Pulse/Analog Kit, and a PC with the PC application installed.
2. Firmly fix the remote box at a horizontal or vertical position on the vehicle.

NOTE:
For the direction of detection of G sensor acceleration, the arrow direction on the X- and Y-axis indicated on the remote box is output as the + (plus) side.

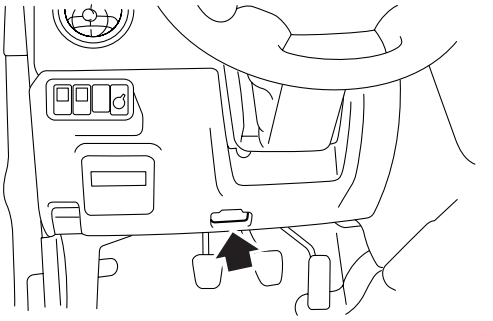


SMU-00703

A: When acceleration is given to direction of the arrow, analog output of X axial direction (the red probe) voltage rises.
B: When acceleration is given to direction of the arrow, analog output of Y axial direction (the blue probe) voltage rises.

3. Connect the remote box to the SDI.
4. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.

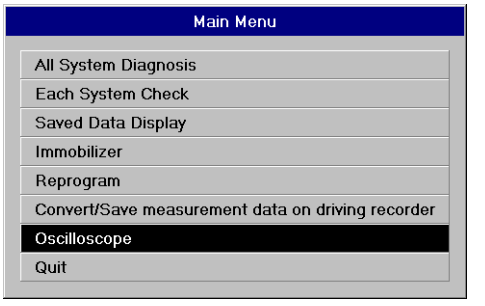


SMU-00113

5. Use the USB cable to connect the SDI to the PC.
6. Connect the pulse/analog box to the SDI.
7. Connect the red and blue probes of the remote box to the analog port of the pulse/analog box, and the black probe to the COM port.

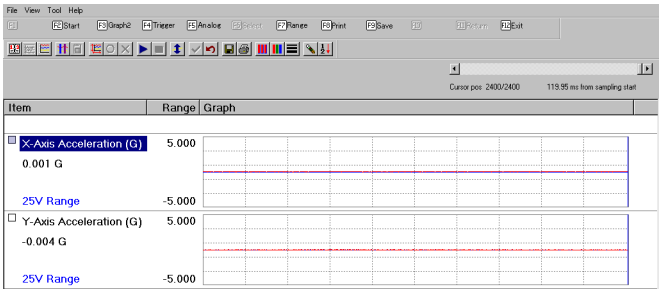
NOTE:
The red probe outputs the X-axis signal and the blue probe the Y-axis signal. The probe is the GND.

8. Turn on the vehicle's ignition switch.
9. Double-click the SSMIII icon on the PC screen to start up the application.
10. On the Main Menu that appears on the display, select [Oscilloscope] and then press the [Enter] key or left-click with the mouse.



SMU-00618

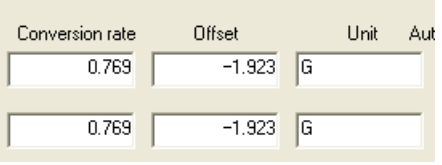
*11.*As the Analog Sampling screen is displayed, set the input range to [5 V]. For details about input range settings, see "Configuring Analog Sampling Settings" under "Analog Sampling"



SMU-00704

NOTE:
The output characteristics of this G sensor is 1.3V/G. And, output voltage is 2.5V at 0G. Therefore, to display G sensor output as physical values (Unit: G), enter the numerical values below in Conversion rate and Offset of analog sampling.

- Conversion rate = 0.769
- Offset = -1.923



SMU-00823

If it is shifting from zero (0G) when remote box is horizontal after setting to physical display as above, insert a Phillips head screwdriver into the bias adjustment hole, and turn the adjustment screw to adjust the waveform level. During this adjustment, turning the screwdriver clockwise moves the waveform to the “-” (minus) direction.

Guideline for reprogramming procedure for SSMIII

The SSMIII has a pass-thru reprogram function. This section explains the procedure for reprogramming with the SSMIII.

Notes on doing ECM reprogramming

Before starting

1) Do reprogramming more than 50 m (164 ft) away from high voltage wires.
2) Do reprogramming more than 10 m (33 ft) away from equipment that might emit high voltage.
3) Do reprogramming more than 2 m (7 ft) away from equipment that emits electronic noise (such as a vehicle having its ignition checked).
4) Do reprogramming more than 2 m (7 ft) away from electronic devices that emit radio waves (such as cellular phones or pagers).
5) Before starting the reprogramming, turn off all the electric equipment (such as the ignition system, audio system, cigarette lighter, or power seats).
6) Reprogramming automatically turns off if the ambient temperature falls below 0°C (32°F).
7) Before reprogramming, be sure to set the PC power management to “Always ON”. Failure to set to “always ON” may cause communication error due to PC power down on the way of reprogramming resulting in reprogramming failure.
8) Before reprogramming, confirm DTC on all ECM including the ECM for reprogramming. If you find DTC, please restore the parts, which have problems.

During reprogramming

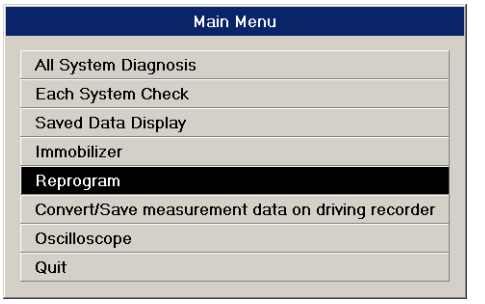
1) Do not touch any switches in the vehicle.
2) Do not touch the pedals, and do not open or close the doors.
3) Stay near the car
4) Do not touch the cables or connectors, and do not move the SDI.
5) Even if some of the warning lights in the combination meter turn on during reprogramming or displays “ErrHC”, “ErrEG” or etc. in multi-information part, these are not errors.

ECM reprogramming

1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the SSMIII application installed.
2. Attach the test mode connector (green).

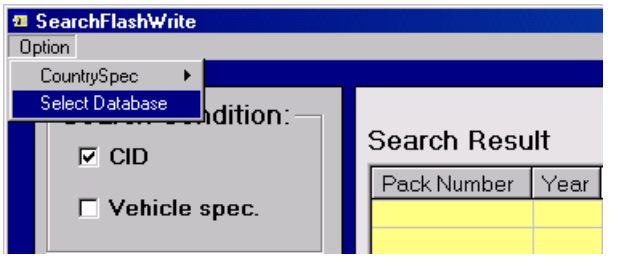
NOTE:
The jumper harness may need to be attached separately depending on the type of vehicle.

3. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.
4. Connect the SDI to the PC with the USB cable.
5. Turn on the vehicle’s ignition switch.
6. Double-click the SSMIII icon on the PC screen to start up the SSMIII application. This causes the Main Menu to appear.
7. Select [Reprogram] from the Main Menu to execute it.



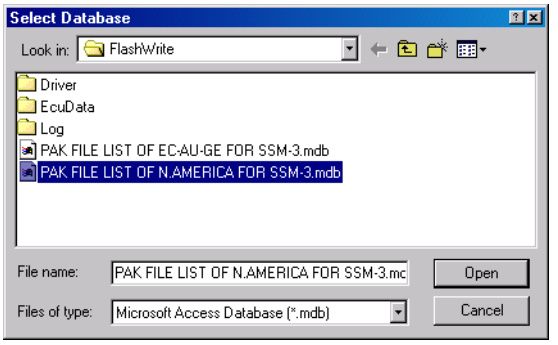
SMU-00611

8. This displays Serch FlashWrite screen. Select “Select Database” from “Option” in menu.



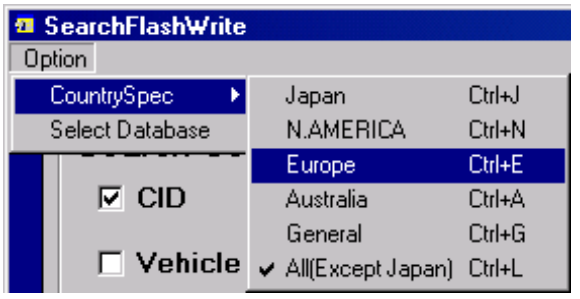
SMU-00801

9. This displays the Select Database window. Select the desired database file (.mdb file) and click the [Open] button.



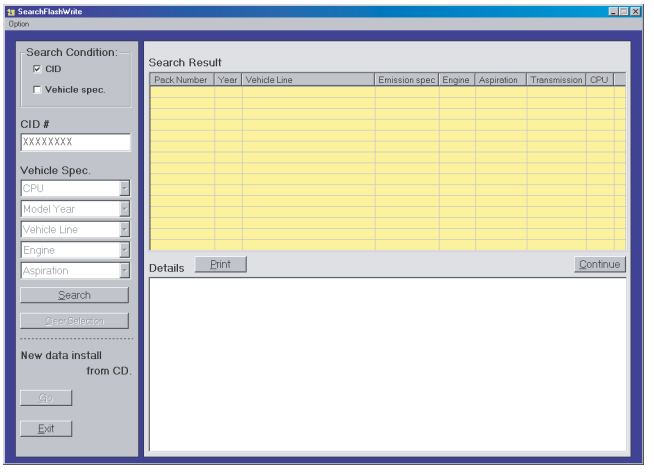
SMU-00802

10. Select “CountrySpec” in menu to select desired destination. This causes search conditions of PAK file to be refined for selected destination.



SMU-00803

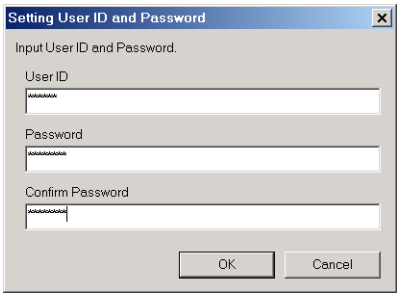
11. In the Search FlashWrite screen, check the CID check box, input the CID of the ECM that you are going to reprogram, and then click the [Search] button to find the PAK file. If you don’t know the CID of the ECM, use the vehicle specifications to find the PAK file.



SMU-00686

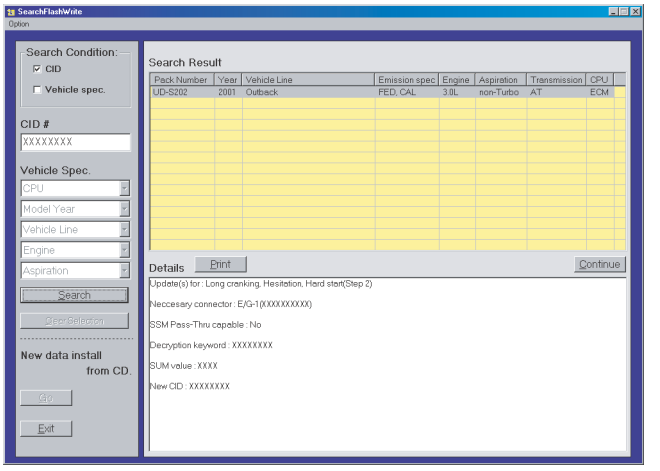
NOTE:

- If no search results are displayed when Vehicle spec. is selected as a Search Condition, you can clear the search items by pressing the [Clear Selection] button to return the selected search items to their initial status.
- The password request dialog box appears when you execute reprogram on a computer on which the first diagnostic software has been installed.



SMU-00407

12. Check the results of the search, then double click the PAK file listed in the Pack Number column, or after clicking to make a selection click the [Continue] button.

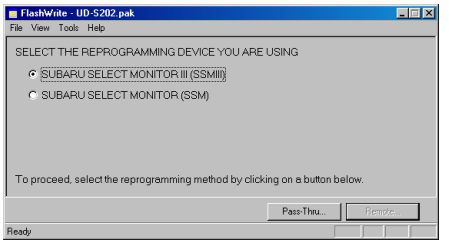


SMU-00687

NOTE:

You can print out information of the selected items in Search Result column and each of their detailed information by clicking the [Print] button.

*13.*Select the reprogramming device you are using (in this case, select SUBARU SELECT MONITOR III), and then click the [Pass-thru] button to start reprogramming.



SMU-00541

*14.*Perform reprogramming in accordance with the instructions that appear on the screen. For more information on reprogramming, see the FlashWrite HELP file.

Action to be taken when communication error occurs during reprogramming

The following dialog box will appear when communication error occurs for some reasons such as PC or SDI power OFF, or disconnection of diagnosis cable or USB cable during reprogramming. In this case, refer to the notes below and reprogram again according to the instruction appeared on the screen.

Basically, communication error during reprogramming will not damage the ECM. However, be careful that the erroneous action may cause damage to the ECM when you take the countermeasure.

SMU-00773

NOTE:

When the reprogram is performed using SSMIII, the information associated with reprogramming of the ECM will be stored in the hard disc of the PC. This information is used in the future reprogramming. Also, this information is overwritten every time the ECM is reprogrammed. Therefore, reprogramming becomes impossible when an error occurs but reprogramming is done for another ECM before attempting to re-reprogram the affected parts, since the information stored in the hard disc has been overwritten. To prevent this, whenever the communication error occurs, be sure to re-reprogram the affected ECM before the information associated with the reprogramming in the hard disc is overwritten. The information stored in the hard disc will not be erased even if the PC power is OFF.

Reprogramming of main microcomputer and sub-microcomputer

When the ECM has a main microcomputer and a sub-microcomputer, NSM executes reprogramming twice. However, as SSMIII permits consecutive rewriting of main microcomputer and sub-microcomputer, both microcomputers can be rewritten through one reprogramming.

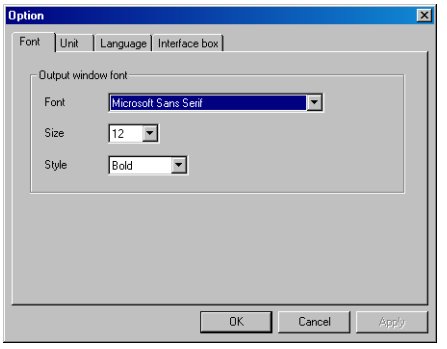
Setting Screen Font, Display Unit and Display Language

Changing the Screen Font

The font face, size, and style of the screen font can be changed as desired. Click the [Tool] menu, and then click [Option] to display the font selection tab.

SMU-00597

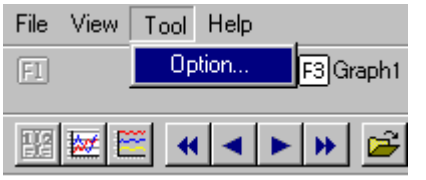
Click the [Font] box arrow button and then select a font from the list of options that appears.
Click the [Size] box arrow button and then select a size from the list of options that appears.
Click the [Style] box arrow button and then select the style (standard or bold) from the list of options that appears.
After configuring all of the settings, click the [OK] button.



SMU-00684

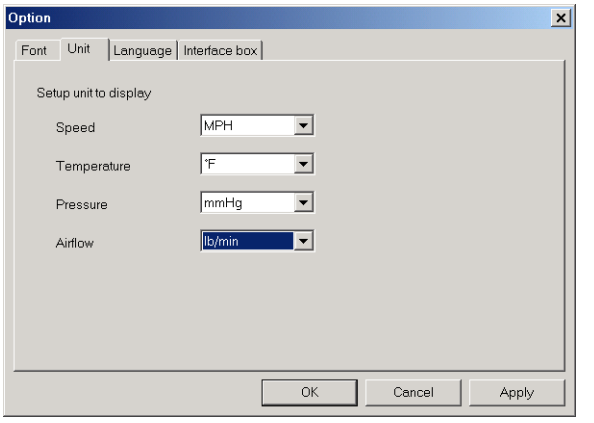
Changing the Display Units

SSMIII normally uses SI units to display values, but non-SI units can be specified for speed, temperature, pressure, and airflow. Click the [Tool] menu and then click [Option].



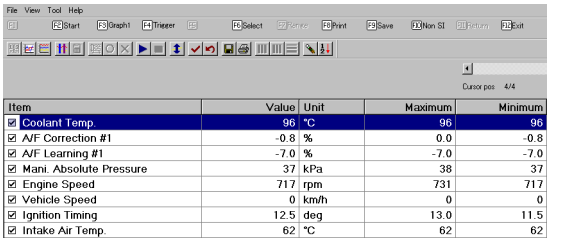
SMU-00597

On the unit selection tab, select the desired units and then click the [OK] button.



SMU-00102

Clicking the F10 Non SI button on the Digital Data Screen or Graph Screen Function Key Bar, or pressing the F10 function key on the PC keyboard will display the sampled data using the display units selected above.



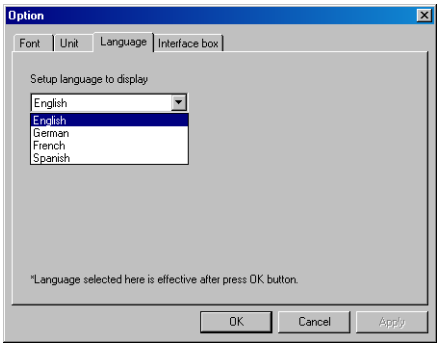
SMU-00598

To return to the SI unit screen, click F10 SI or press the F10 function key on the PC keyboard.

Changing the Display Language

Click the [Tool] menu, and then click [Option] to display the language selection tab.
Select the desired language from the selection box that appears.

NOTE:
When you install the application, the language of the PC operating system is selected automatically.



SMU-00685

Analog Sampling

Analog data sampling can be performed using the optional pulse/analog cartridge, the pulse/analog box, and pulse/analog probe.

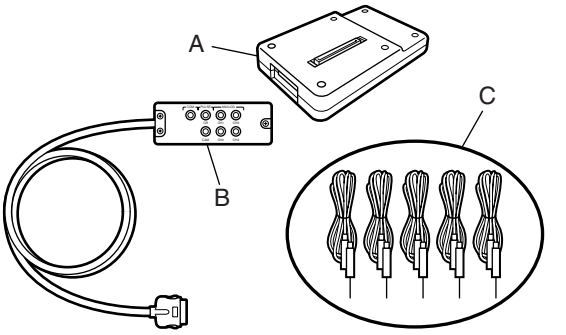
NOTE:

- The pulse/analog cartridge, pulse/analog box, and pulse/analog probe are options. They are not included in the standard SSMIII Kit.
- In case of analog sampling, maximum 5,000 data can be saved.
- Since this device is a differential input device, minus (-) sampling is also supported. This device can be inputted from four channels using four pulse/analog probes. On the other hand, a minus input is shared and is one.

Handling Precautions

- Never try to disassemble the SDI, the pulse/analog cartridge, the pulse/analog box, or the pulse/analog probe.
- Be sure to turn off SDI power (PWR LED not lit) before installing or removing the pulse/analog cartridge. Installing or removing the cartridge while power is on can damage the SDI and the pulse/analog cartridge.
- Be sure to attach the back cover of the SDI correctly. Incorrectly attaching the cover can cause SDI power to disengage.
- Never touch the connectors of the SDI or the pulse/analog cartridge without first discharging your body of static electricity. Doing so can damage the SDI and pulse/analog cartridge.
- This device is not water resistant. Never allow it to be splashed with water, oil, grease, etc.
- The rated input voltage range of the COM port is ±30V. Never input a signal that exceeds the rated voltage. Doing so can damage the device.

Pulse/Analog Kit Contents



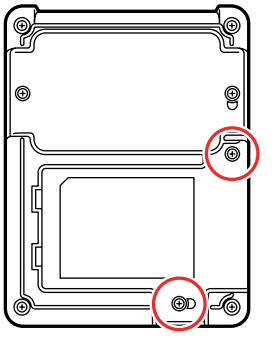
SMU-00612

A: Pulse/analog cartridge
B: Pulse/analog box
C: Pulse/analog probe

Getting Ready for Sampling

To install the pulse/analog cartridge in the SDI

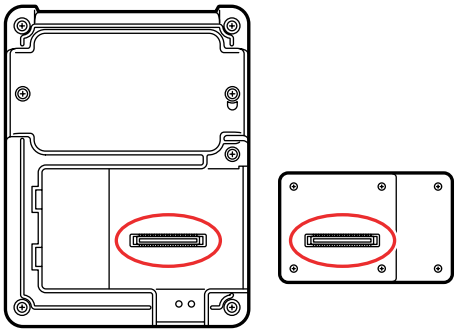
1. Prepare the SDI, pulse/analog cartridge, and a Phillips head screwdriver.
2. Loosen the two screws that secure the cover on the back of the SDI where the caution label is affixed, and remove the cover.



SMU-00613

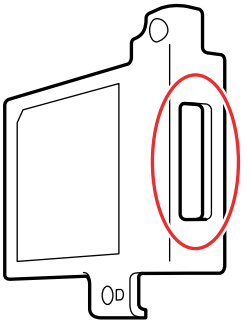
3. Install the pulse/analog cartridge in the SDI.

   Take care that the connectors of the pulse/analog cartridge and the SDI are aligned correctly when you install the cartridge.



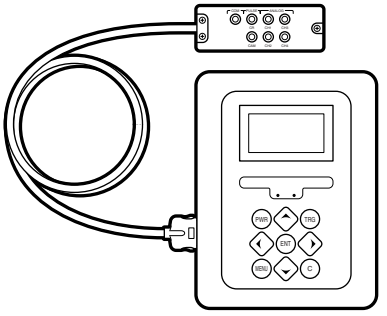
SMU-00614

4. Remove the blind plug attached to the cover. The pulse/analog box connector will connect in at the location where you remove the blind plug.



SMU-00615

5. Correctly attach the cover and then tighten the two screws to secure it in place.
6. Connect the pulse/analog box at the location where you removed the blind plug on the SDI back cover.

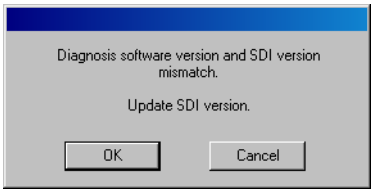


SMU-00616

7. Make sure that SDI power turns on normally to complete this procedure.

Upgrading Your SDI Firmware

You need to update your SDI firmware version before performing analog sampling for the first time. You will not be able to perform analog sampling using an old SDI firmware version.
A screen like the one shown below will be displayed when you start analog sampling after installing the pulse/analog cartridge. Follow the instructions on the screen to update your firmware version. Please wait until the version update process is complete before trying to do anything else.

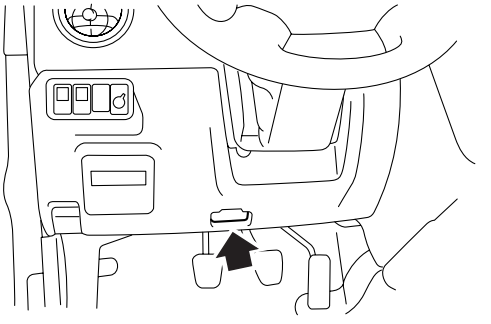


SMU-00617

Starting a Sampling Operation

1. Prepare the SDI, diagnosis cable, USB cable, a PC with the PC application installed, the pulse/analog box, and the pulse/analog probe.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

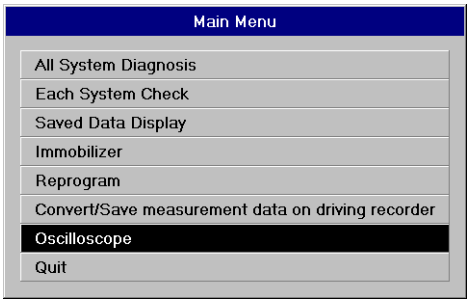
NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



SMU-00113

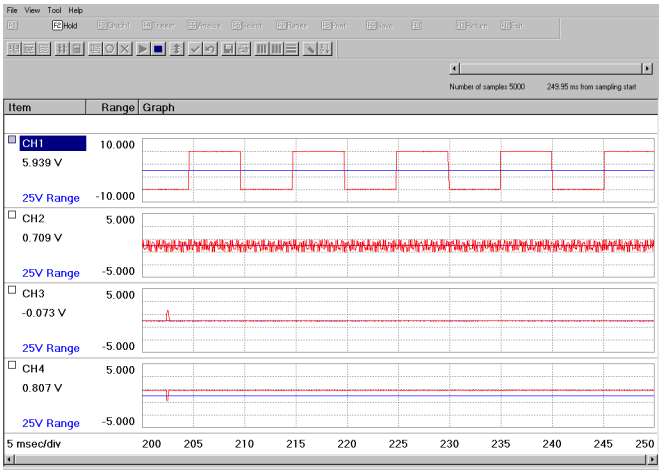
3. Use the USB cable to connect the SDI to the PC.

4. Connect the pulse/analog box to the SDI.
5. Connect the pulse/analog probe to the pulse/analog box.
6. Connect the pulse/analog probe the location where you want to sample.
7. Turn on the vehicle's ignition switch.
8. Double-click the SSMIII icon on the PC screen to start up the application.
9. On the Main Menu that appears on the display, select [Oscilloscope] and then press the [Enter] key or left-click with the mouse.



SMU-00618

10. This displays the Graph 1 screen and automatically starts sampling.



SMU-00619

Configuring Analog Sampling Settings

When performing analog sampling, you should configure input range, screen range, and sampling mode settings as required. You can save settings to a file for later load when you need them again.

Selecting the Sampling Mode

You can select a sampling mode that continuously takes samples without stopping automatically, or a mode that stops sampling automatically after 5,000 data samples are obtained.

1. While sampling is stopped, click the F5 Analog button on the Function Key Bar or the F5 function key on the PC keyboard.

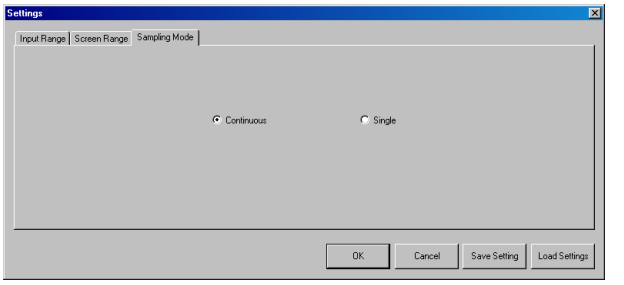
SMU-00621

2. On the setup screen that appears, click the [Sampling Mode] tab.

   Select either [Continuous] or [Single] and then click the [OK] button.

   When [Continuous] is selected, sampling will continue without stopping automatically.

   With [Single], sampling will stop automatically after 5,000 data samples are obtained.



SMU-00622

NOTE:
The initial default setting for the sampling mode is [Continuous]. Change the setting to [Single] as required.

Setting the Screen Range

The screen range specifies the display range on your PC screen during sampling. There are two screen range settings available: "AUTO range settings", which automatically adjusts the range in accordance with the input data range, and "User settings", which lets you manually set the screen range you want.

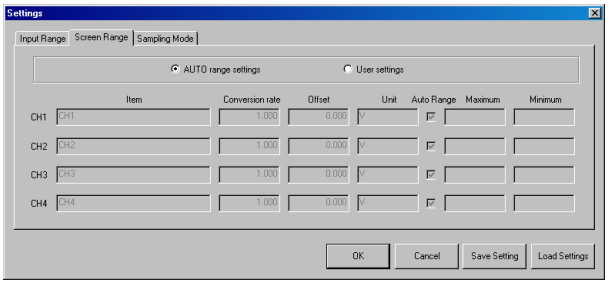
1. While sampling is stopped, click the F5 Analog button on the Function Key Bar or the F5 function key on the PC keyboard.

SMU-00621

2. On the setup screen that appears, click the [Screen Range] tab.

   Configure the settings and then click the [OK] button.

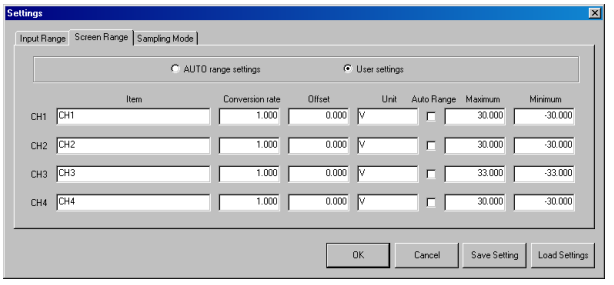
AUTO range settings



SMU-00623

When “AUTO range settings” is selected, the screen range is adjusted automatically in accordance with input data.

User settings



SMU-00624

With the “User settings”, you can specify desired values for each channel for data display. You can also specify a conversion rate to display data in physical values instead of simple voltage values.

1) Item
The input name appears on the measurement screen under “Item”.
2) Conversion Rate
This is a per Volt conversion value. For information about conversion rate values, see the user documentation that comes with the device you are using.
3) Offset
This is the offset of the converted value.
4) Unit
This specifies the unit.
5) Auto Range
Each channel can be individually configured with the auto range setting or with user settings. The channels you checked can be drawn by the auto range, based on the values calculated from conversion rates and the offsets.
6) Maximum
This specifies the maximum screen range setting.
7) Minimum
This specifies the minimum screen range setting.

NOTE:
After inputting values or other information for a setting item, you can apply the setting by moving the mouse cursor to another input box or by pressing the [Enter] key on your PC keyboard. You can move the mouse cursor to another input box either by clicking with the mouse or by pressing the [Tab] key on your PC keyboard.

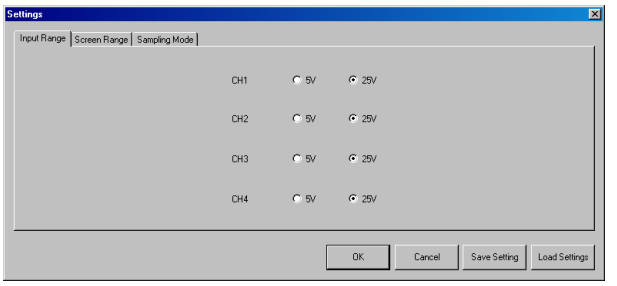
Selecting the Input Range

You can select either 5V or 25V as the input range, depending on the range of your input data.

1. While Sampling is stopped, click the F5 Analog button on the Function Key Bar or the F5 function key on the PC keyboard.

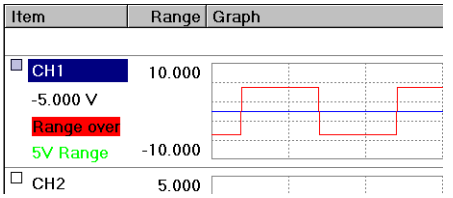
SMU-00621

2. This displays the setup screen. Select either 5V or 25V and then click the [OK] button.



SMU-00625

25V is the initial default setting. Change the setting to 5V as required. Leaving the input range set to 5V when the input data is greater than 5V will cause a “Range Over” message like the one shown below to appear. If this happens, change the input range setting to 25V.



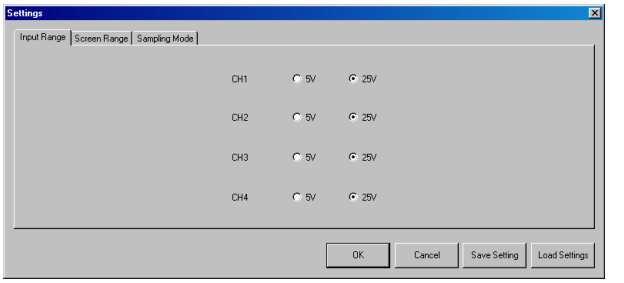
SMU-00626

NOTE:
The input range setting [5 V] has a higher resolution setting than the input range [25 V]. When measuring with an input within 5 V, measuring with higher accuracy is possible by selecting the input range setting [5 V].

Saving a Setup

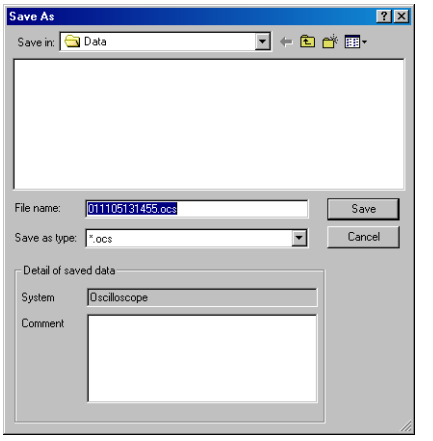
You can save a setup (input range, screen range, and sampling mode) for later load when you need it.

1. Display the analog sampling setup screen and then click the [Save Setting] button.



SMU-00625

2. This will display the setup data save dialog box. The name of the data file being saved is generated automatically in accordance with the current time and date. If you want to use the generated file name as-is, click the dialog box [Save] button. If you want to change to a different file name, type in the name you want.



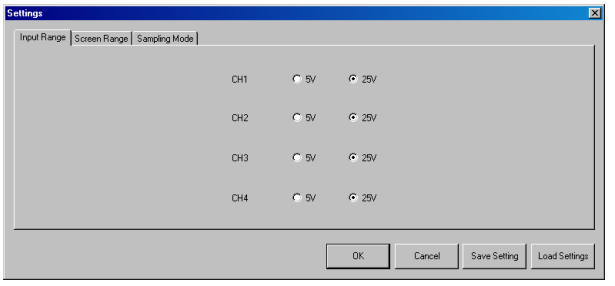
SMU-00627

NOTE:
Clicking the [Save] button saves the settings of all of the tabs, regardless of which tab is currently displayed. Even if you click the [Save] button at the Input Range tab screen, for example, settings of the Screen Range and Sampling Range tab are also saved.

Loading a Setup File

Use the following procedure to load a setup file and apply its input range, screen range, and sampling mode settings.

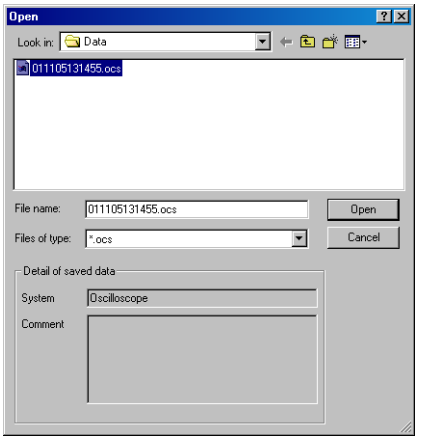
1. On the [Input Range], [Screen Range], or [Sampling Mode] tab of the setup screen, click the [Load Settings] button.



SMU-00625

2. This displays a dialog box with a list of saved setup files.

   Select the desired file and then press the [Enter] key or click [Open].



SMU-00628

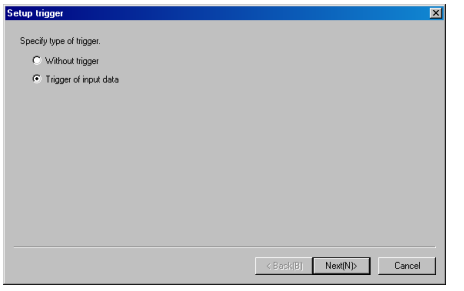
NOTE:

- When loading a setup file, select the file which displays “Oscilloscope” in System field in dialog box.
- Clicking the [Load Settings] button loads settings to all of the tabs, regardless of which tab is currently displayed. Even if you click the [Load Settings] button at the Input Range tab screen, for example, settings of the Screen Range and Sampling Range tab are also loaded.

Trigger Function

The trigger feature lets you configure a trigger to be applied while sampling is in progress. The only type of trigger supported is “Trigger of input data”, whereby you pre-configure trigger settings for a sampling item for automatic trigger detection. “Manual trigger” is not supported for analog sampling.

1. While sampling is stopped, click the F4 Trigger button on the Function Key Bar or the F4 function key on you PC keyboard.
2. This displays a trigger setup screen. Select “Trigger of input data” and then click the [Next] button.

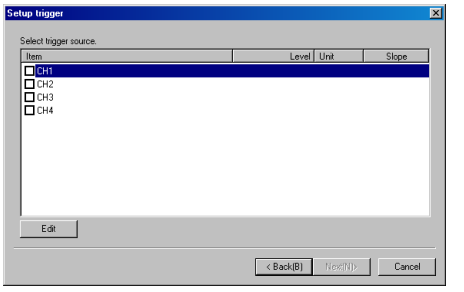


SMU-00630

NOTE:
To turn off a trigger, select “Without trigger” on the above screen and then click the [Cancel] button.

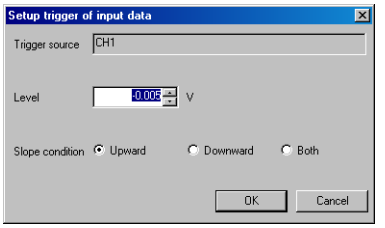
3. Specify the trigger source.

   In the list, select the checkbox next to the channel you want to specify as the trigger source, or double-click the channel.



SMU-00631

4. This displays the Setup trigger of input data screen. Configure the settings and then click the [OK] button.



SMU-00632

The following describes the trigger settings you can configure.

1) Level

This specifies the trigger level, the value that detects triggers. You can input a value directly into the box or use its up and down arrows to change the setting. The setting value is limited to values that can actually be obtained. If you type in a value that cannot be obtained, the software will automatically change it to the nearest allowable value.

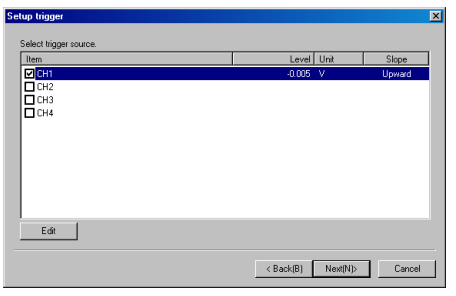
2) Slope condition

This setting specifies the condition for trigger detection when the sample data values reach the trigger level. When [Both] is selected, a trigger is detected when either a Upward or Downward condition is first satisfied.

5. Checkboxes of the channels to which you set triggers are checked.

In the case of analog sampling, you can assign the trigger to only one channel.

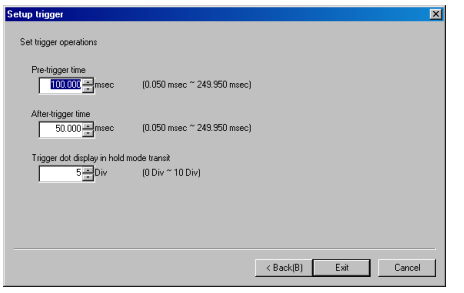
If you do not need to change the details of the setting, click the [Next] button.



SMU-00633

NOTE:
To change a setting, select the desired item and then click the [Edit] button. On the Setup trigger of input data screen that appears, change the setting as desired.

6. This will display the trigger operation screen. Configure the settings and then click the [Exit] button.



SMU-00634

1) Pre-trigger Time

This setting specifies until how much before, starting from the point when the trigger was detected, you wish to save the data. All data previous to the specified pre-trigger time is to be abandoned.

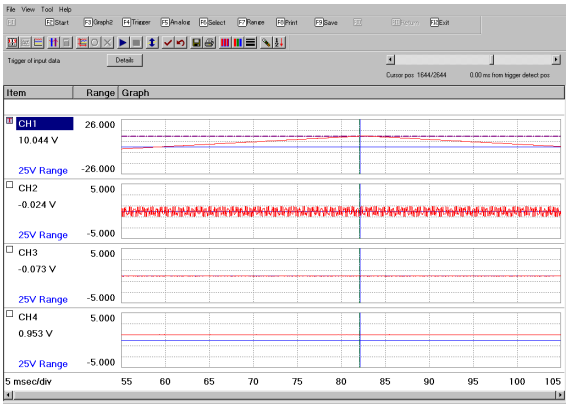
2) After-Trigger Time

This setting is the sampling time after the trigger is detected.

3) Trigger dot display in hold mode transit

This setting is the display location of the trigger point when sampling is complete.

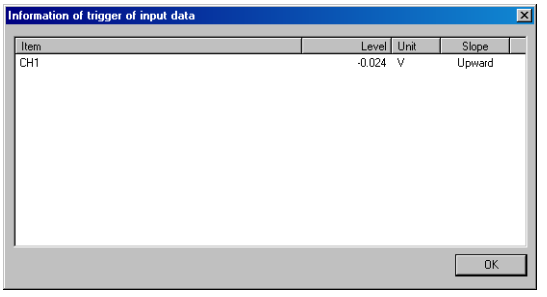
7. This will display the measurement screen and automatically start sampling. If the trigger is detected during sampling, data is collected for the specified time and then sampling stops automatically.



SMU-00772

NOTE:

- Assigning a trigger to an item causes “T” to appear in item’s checkbox.
- On the graph, the trigger level is indicated as a purple chain lines, while the trigger points are indicated by vertical green chain lines.
- Trigger information is displayed on the left side of the Sampling Status Bar. Clicking the [Details] button displays the Information of trigger of input data screen, which you can use to view detailed information about the currently assigned trigger.

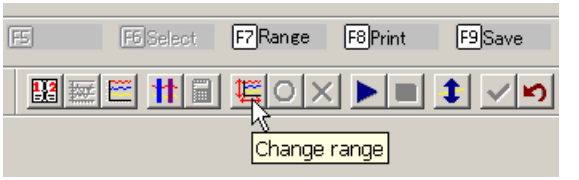


SMU-00636

Changing the Range while Using Auto Range

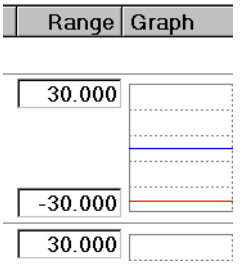
You can use the following procedure to change the range manually, even if “AUTO range settings” is selected as the screen range setting.

1. While sampling is stopped, click the icon on the Data List Toolbar or the F7 Range button on the Function Key Bar. You could also press the F7 function key on the PC keyboard.



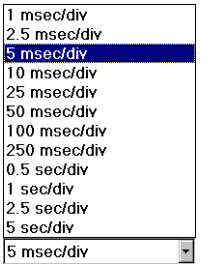
SMU-00585

2. After the screen below appears, input a value to specify the vertical axis range of the graph into the range box.



SMU-00639

3. To specify the graph horizontal (time) axis range, click the range selection box in the lower left corner of the screen, and then select the desired time setting.



SMU-00640

NOTE:

- Sampling cannot be performed with the time axis range set to 1 msec/div or 2.5 msec/div. The setting will change to 5 msec/div automatically if 1 msec/div or 2.5 msec/div is selected. The 1 msec/div and 2.5 msec/div settings are valid for analysis only.
- A longer time axis range causes a correspondingly slower sampling cycle.

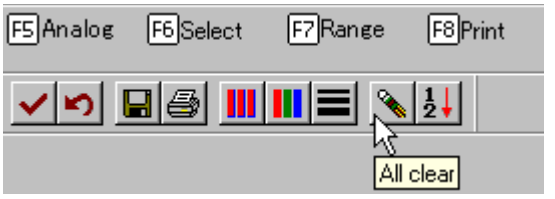
4. After selecting the graph vertical axis and horizontal axis ranges, click the icon on the Data List Toolbar or the F11 OK button on the Function Key Bar to apply the ranges. You can also apply the range settings by pressing the [F11] function key on the PC keyboard.

SMU-00586

To cancel the range change operation, click the icon on the Data List Toolbar or the F12 Cancel button on the Function Key Bar. You can also cancel the range change operation by pressing the F12 function key on the PC keyboard.

Initialize Item Settings

Clicking the icon on the Data List Toolbar returns all item settings to the initial defaults as shown below.



SMU-00645

- Input Range: 25V
- Screen Range: AUTO range settings
- Sampling Mode: Continuous
- Time Axis: 5msec/div
- Trigger: Without trigger

Other Operations

With analog sampling, the following tasks can be performed using the same procedures as those described under “Each System Check”. For details about procedures, see the section on this manual that explains the particular item.

1. The following functions can are available using the same procedures as described under “Current Data Display and Save”

- Sampling start and stop
- Digital Data Screen
- Graph 2 Screen
- Changing the Width of Screen Cells
- Changing the Item or Graph Sequence
- Initializing the Item or Graph Sequence
- Data Select Screen
- Returning to the All Data Screen
- Saving Sampled Data
- Printing Sampled Data
- Previewing the Print Image
- Setting Up the Printer
- Moving the Graph Cursor
- Changing the Graph Line Color
- Changing the Graph Line Thickness
- Marking Function

2. Two Cursor Analysis
3. Saved Data Display
4. Setting Screen Font, Display Unit and Display Language

ECM Analog Simultaneous Measurement

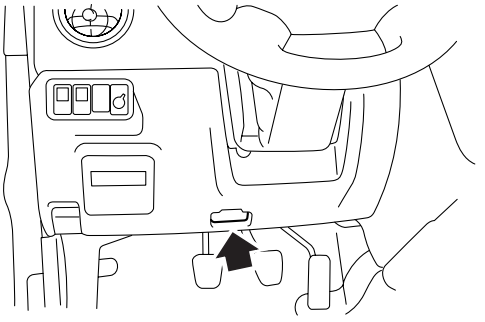
Analog data and ECM data can be sampled simultaneously using the Pulse/Analog Kit (option).

NOTE:
- This function cannot be used if the pulse/analog cartridge is not installed.
- See “Analog Sampling” for handling precautions about Pulse/Analog Kit, how to install the pulse/analog cartridge in the SDI and how to update the SDI firmware.

Starting ECM Analog Simultaneous Measurement

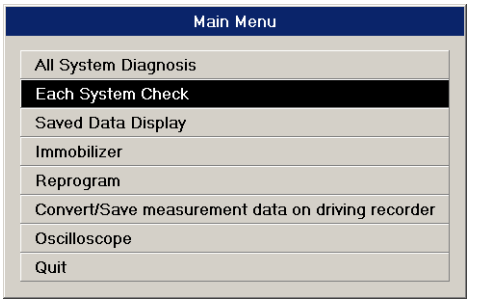
1. Prepare the SDI, diagnosis cable, USB cable, a PC with the PC application installed, the pulse/analog box, and the pulse/analog probe.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle’s ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



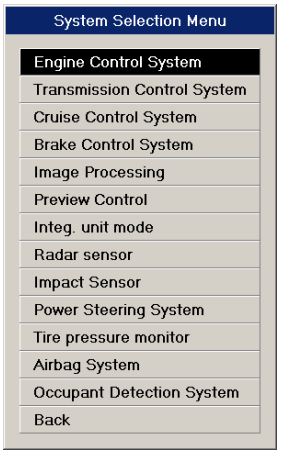
SMU-00014

3. Use the USB cable to connect the SDI to the PC.
4. Connect the pulse/analog box to the SDI.
5. Connect the pulse/analog probe to the pulse/analog box.
6. Connect the pulse/analog probe to the location where you want to sample.
7. Turn on the vehicle’s ignition switch.
8. Double-click the SSMIII icon on the PC screen to start up the application.
9. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



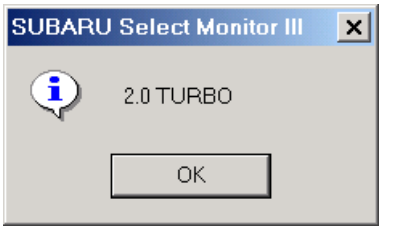
SMU-00600

10. On the System Selection Menu, select the desired system and then press the Enter key or left-click with the mouse. (As an example, “Engine” is selected.)



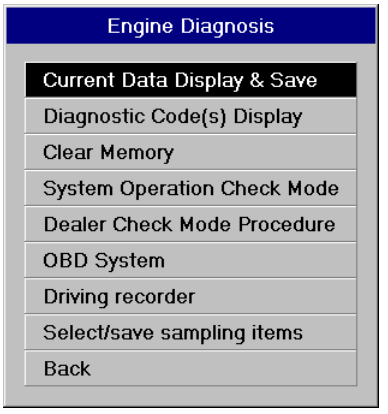
SMU-00665

11. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.



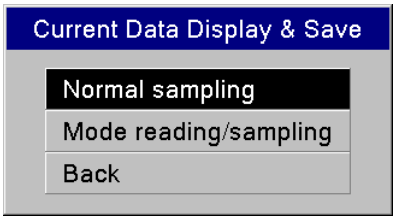
SMU-00128

*12.*From the list of fault diagnosis items, select [Current Data Display & Save] and then press the Enter key or left-click with the mouse.



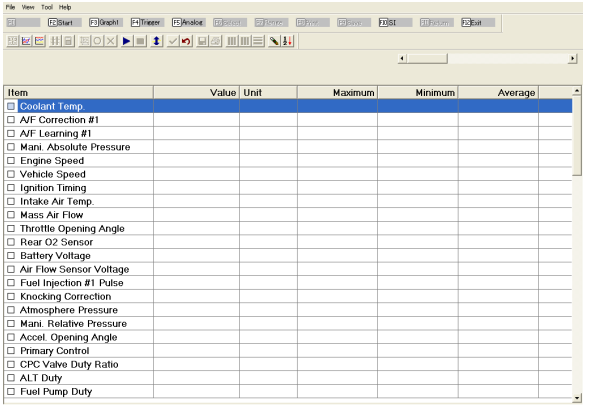
SMU-00601

*13.*This displays the dialog box shown below. Select [Normal sampling] and then press the Enter key or left-click with the mouse.



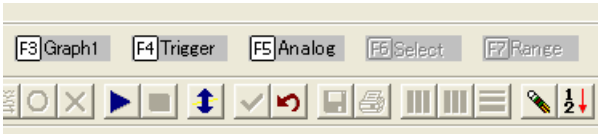
SMU-00508

*14.*This displays the sampling screen and automatically starts sampling. Stop this sampling.



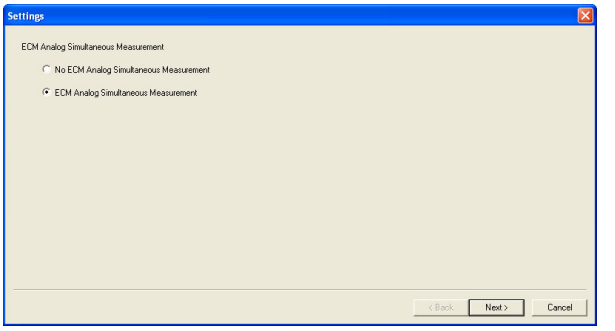
SMU-00813

*15.*Click the F5 Analog button on the Function Key Bar, or press the F5 function key on the PC keyboard.



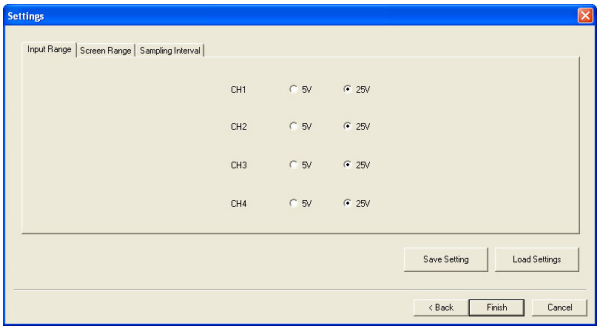
SMU-00815

*16.*On the setup screen that appears, select “ECM Analog Simultaneous Measurement” and click the [Next] button.



SMU-00816

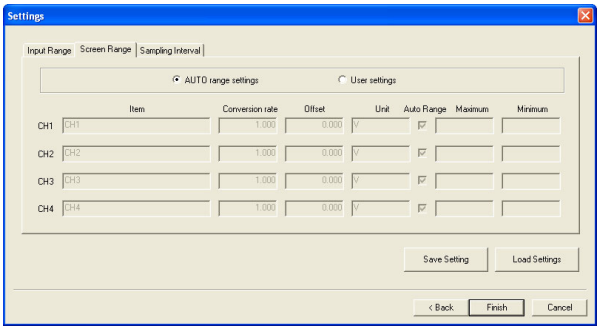
*17.*Select “Input Range” tab to configure the input range of analog data. Configure the desired range.



SMU-00832

NOTE:
For details about input range settings, see “Configuring Analog Sampling Settings” under “Analog Sampling”.

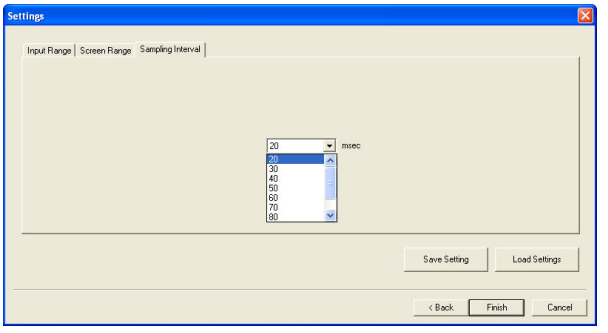
*18.*Select “Screen Range” tab to configure the screen range of analog data. Configure the desired range.



SMU-00833

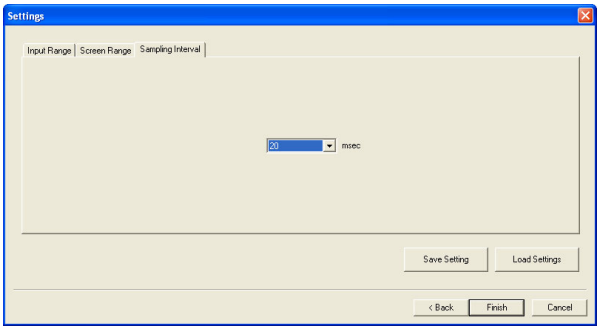
NOTE:
For details about screen range settings, see “Configuring Analog Sampling Settings” under “Analog Sampling”.

*19.*Select “Sampling Interval” tab to configure the sampling interval of analog data. Select the desired interval from drop-down menu.



SMU-00834

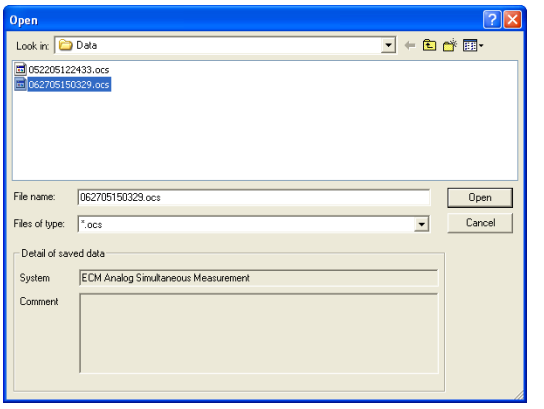
*20.*After configuring the settings of all tabs, click the [Finish] button.



SMU-00835

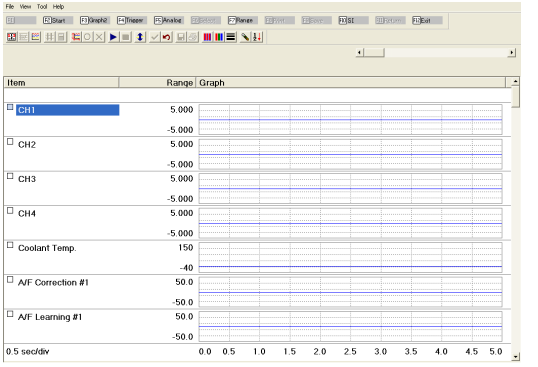
NOTE:

- You can save the settings of Input Range, Screen Range and Sampling Interval as a setup file, and load the saved setup file. This can be performed using the same procedures as those described in “Configuring Analog Sampling Settings” under “Analog Sampling”. For this procedures, see the appropriate item.
- When loading a setup file, select the file which displays “ECM Analog Simultaneous Measurement” in System field in dialog box.



SMU-00819

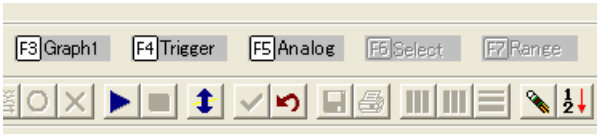
*21.*Start sampling by clicking ▶ icon on the Data List Tool bar or the F2 Start button on the Function Key Bar, or pressing the F2 function key on the PC keyboard.



SMU-00820

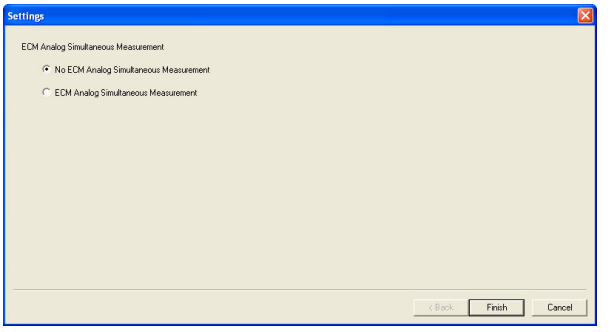
Stopping ECM Analog Simultaneous Measurement

1. Click the F5 Analog button on the Function Key Bar, or press the F5 function key on the PC keyboard.



SMU-00815

2. On the setup screen that appears, select “No ECM Analog Simultaneous Measurement” and click the [Finish] button.



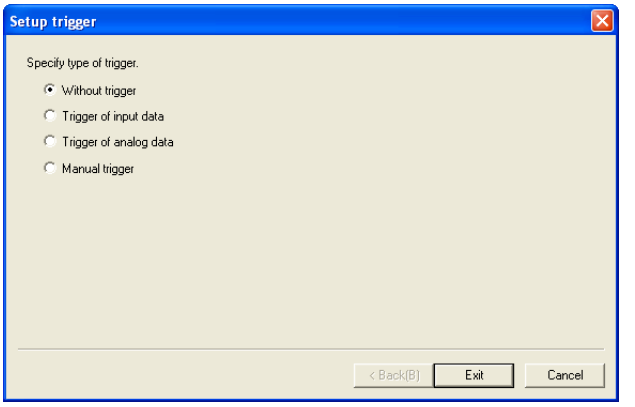
SMU-00821

Trigger Function

The trigger feature lets you configure a trigger to be applied while sampling is in progress. There are three trigger setting methods: “Trigger of input data”, where a trigger is set in advance to a sampling item and trigger detection is performed automatically for ECM data, “Analogue data trigger” with automatic trigger detection for analogue data, and “Manual trigger” with manual trigger. When sampling is performed using a trigger, data is stored from the start of the sampling until the specified time from trigger detection elapses.

Trigger setting

1. While sampling is stopped, click the F4 Trigger button on the Function Key Bar or the F4 function key on you PC keyboard.
2. This displays a trigger setup screen. Select “Trigger of input data” and then click the [Next] button.



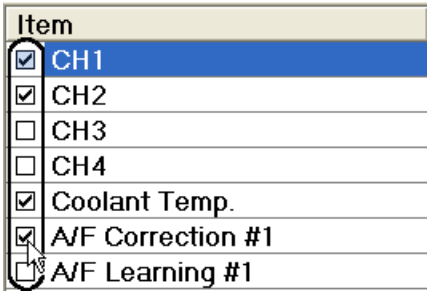
SMU-00896

NOTE:
To turn off a trigger, select “Without trigger” on the above screen and then click the [Cancel] button.

3. For the following trigger setting methods, refer to the section “Trigger” of ECM data sampling for “Trigger of input data” and “Manual trigger”, and refer to the section “Trigger Function” in “Analogue sampling data” for “Analogue data trigger”. However, this function does not have the setting “Pre-trigger time” on the trigger function for analogue sampling

Data Select Screen

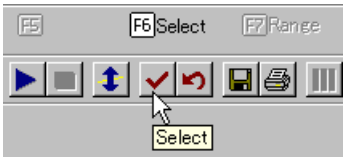
The Data Select Screen can be used to select particular data from all of the data sampled and view it. When there is no sampling operation being performed, click the check box in front of the item you want to view. An item is selected for viewing when there is a check mark inside its check box. You can also select (check) the checkbox of the highlighted item by pressing the space bar on the PC keyboard.



SMU-00822

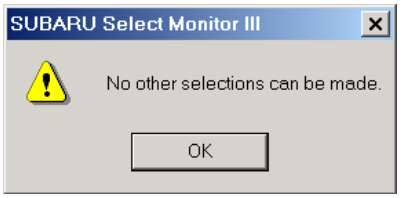
NOTE:
Be sure to put one check mark or more on the sampling items of both ECM data and analog data. The Select Screen cannot be displayed without check marks on both ECM data and analog data.

Click the icon on the Data List Toolbar or the F6 Select button on the Function Key Bar. This will display the selected items only.
You can also display the selected items by pressing the F6 function key on the PC keyboard.



SMU-00575

NOTE:
- Displaying selected data causes data sampled up to that point to be deleted.
- Sampling is faster when specific data items are selected. (This applies only to engine and transmission sampling.)
- If the message dialog box shown below appears while you are selecting data items, it means that the limit on the number of selectable ECM data items has been reached. (Not involved with the number of selected items for analog data) Selection of further ECM data items is not possible after this message appears.
  To select other items, deselect the check boxes next to the currently selected (checked) items of ECM data, and then select the new items.



SMU-00154

Setting All Clear Function

Clicking the icon on the Data List Toolbar returns all item settings to the initial defaults as shown below.

- Item sequence: default setting on each models
- Data Select Screen: all items not selected
- Horizontal axis range of Graph Screen: default setting on each item
- Vertical axis range of Graph Screen: 0.5 sec/div
- Graph line color of Graph Screen: all red
- Graph line thickness of Graph Screen: 1 point
- Trigger function: without trigger
- Two Cursor Analysis: end of Two Cursor Analysis
- Input Range: 25V
- Screen Range: AUTO range settings

Other Operations

With ECM Analog simultaneous measurement, the following tasks can be performed using the same procedures as those described under “Each System Check” or “Analog Sampling”. For details about procedures, see the section on this manual that explains the particular item.

1. The following functions available using the same procedures as described under “Current Data Display and Save”

- Sampling start and stop
- Digital Data Screen
- Graph Screen
- Changing the Width of Screen Cells
- Changing the Item or Graph Sequence
- Initializing the Item or Graph Sequence
- Returning to the All Data Screen
- Saving Sampled Data
- Printing Sampled Data
- Previewing the Print Image
- Setting Up the Printer
- Moving the Graph Cursor
- Changing the Graph Line Color
- Changing the Graph Line Thickness
- Marking Function
- Graph Range Setting of ECM Data

2. The following functions available using the same procedures as described under “Analog Sampling”

- Graph Range Setting of Analog Data

3. Two Cursor Analysis
4. Saved Data Display
5. Setting Screen Font, Display Unit and Display Language

Roughness Monitor

Roughness monitor can be used to monitor combustion condition of each cylinder. There are two types for this function.

1) Simple Roughness Monitor
   Simple Roughness Monitor displays the engine speed and count of misfire at each cylinder as well as normal SSMIII data sampling.

2) High-Grade Roughness Monitor
   High-Grade Roughness Monitor calculates standard deviation, engine speed, etc. based on pulse data of crankshaft position sensor and camshaft position sensor, and displays the value and graph.
   Though the display screen of High-Grade Roughness Monitor is slightly different from normal one, basic procedure is identical. Refer to appropriate items for procedure which is not described in this section.

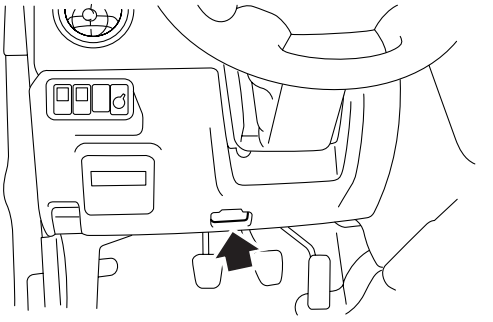
NOTE:
- Standard deviation is digitization of dispersion in rotation of all cylinders or each one. If this value is extremely higher than other cylinder, it determines that combustion condition is faulty. Besides, this function also displays average value of engine speed. If this value is extremely lower than other cylinder, it also determines that combustion condition is faulty.
- When you use the roughness monitor function, install the pulse/analog cartridge to SDI in advance. “Roughness Monitor” is not displayed in fault diagnosis items screen if pulse/analog cartridge is not installed.
- When taking out sensor signal, take out it from ECM connector portion. Taking out around sensor may be affected by noise, leading to inaccurate measurement.
- Refer to Service Manual for connector terminal arrangement, wire color, etc. when taking out sensor signal.
- Be careful not to short the signal lines of crankshaft position sensor and camshaft position sensor.
- If the security software such as antivirus software is used, sampling time may be long when sampling with High-Grade Roughness Monitor. In this case, quit the security software before sampling.

Sampling with Simple Roughness Monitor

NOTE:
“Simple Roughness Monitor” cannot be used if there is not “Roughness Monitor” in normal engine Data Display.

1. Prepare the SDI, diagnosis cable, USB cable, and a PC with the PC application installed.
2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

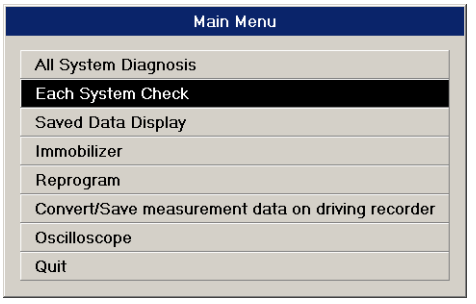
NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle’s ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



SMU-00014

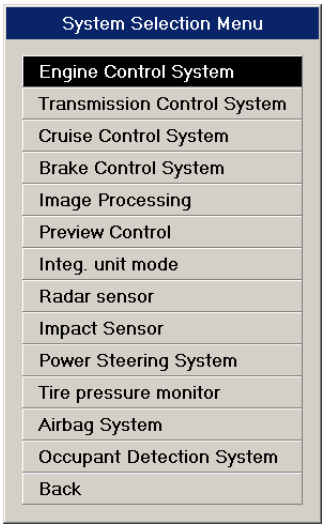
3. Use the USB cable to connect the SDI to the PC.
4. Start the Engine.
5. Double-click the SSMIII icon on the PC screen to start up the application.

6. On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



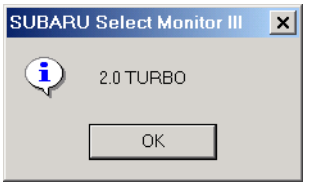
SMU-00600

7. On the System Selection Menu, select [Engine Control System] and then press the Enter key or left-click with the mouse.



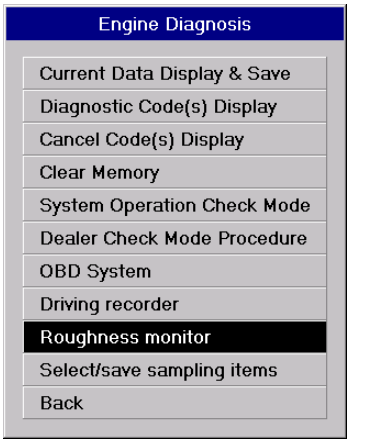
SMU-00665

8. This displays a compliance verification message for the system being diagnosed. Click the [OK] button.



SMU-00128

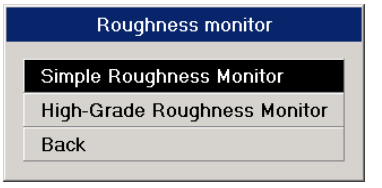
9. From the list of fault diagnosis items, select [Roughness Monitor] and then press the Enter key or left-click with the mouse.



SMU-00774

NOTE:
"Roughness Monitor" is not displayed if the pulse/analog cartridge is not installed to SDI.

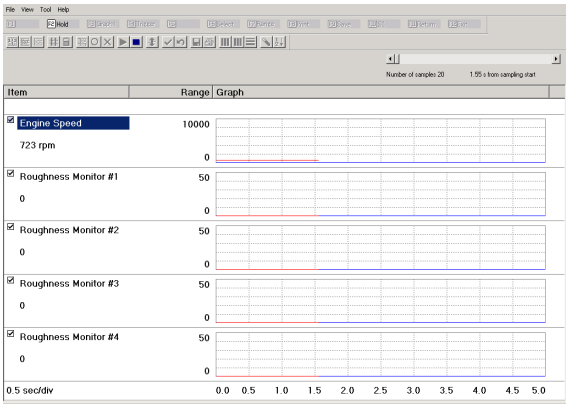
10. From the list of diagnosis items, select [Simple Roughness Monitor] and then press the Enter key or left-click with the mouse.



SMU-00775

NOTE:
"Simple Roughness Monitor" is not displayed if there is not "Roughness Monitor" in normal engine Data Display.

*11.*This displays the Graph Screen and automatically starts sampling.



SMU-00776

NOTE:
You can start and stop sampling and perform other operations using the same procedures as those described under “Current Data Display and Save”. For details about these operations, see “Current Data Display and Save”.

Sampling with High-Grade Roughness Monitor

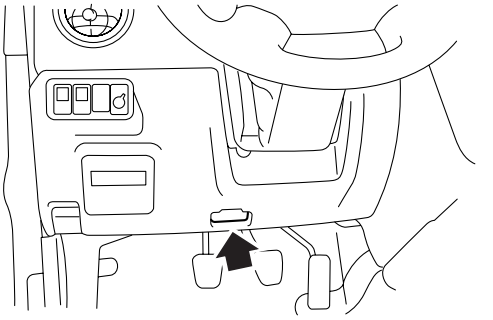
The High-Grade Roughness Monitor can perform “Auto sampling” and “Manual sampling”. Normally, “Auto sampling” is used.

Auto Sampling

1. Prepare the SDI, diagnosis cable, USB cable, a PC with the PC application installed, the pulse/analog box, and the pulse/analog probe.

2. Use the diagnosis cable to connect the SDI to the data link connector of the vehicle.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle’s ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



SMU-00014

3. Use the USB cable to connect the SDI to the PC.

4. Connect the pulse/analog box to the SDI.

5. Connect the signal line (positive side) of crankshaft position sensor to CR terminal of pulse/analog box using pulse/analog probe.

NOTE:
Take out sensor signal from ECM connector portion. Taking out around sensor may be affected by noise, leading to inaccurate measurement.

6. Connect the signal line (positive side) of camshaft position sensor to CAM terminal of pulse/analog box using pulse/analog probe.

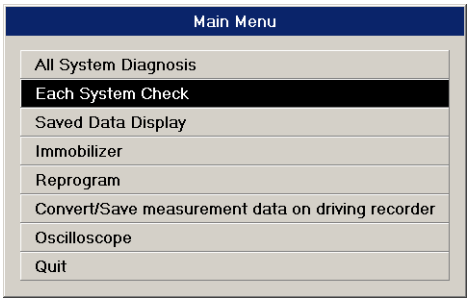
NOTE:
Take out sensor signal from ECM connector portion. Taking out around sensor may be affected by noise, leading to inaccurate measurement.

7. Connect the ground lines (negative side) of ECM to COM terminal of pulse/analog box using pulse/analog probe.

8. Start the Engine.

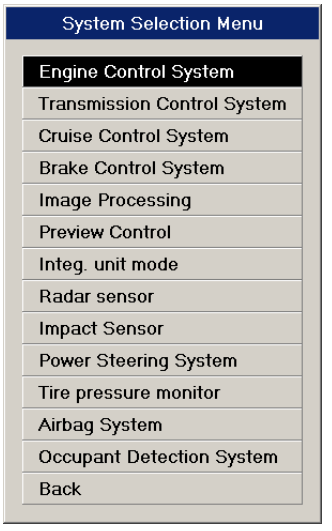
9. Double-click the SSMIII icon on the PC screen to start up the application.

*10.*On the Main Menu that appears on the display, select [Each System Check] and then press the Enter key or left-click with the mouse.



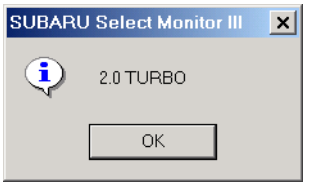
SMU-00600

*11.*On the System Selection Menu, select [Engine Control System] and then press the Enter key or left-click with the mouse.



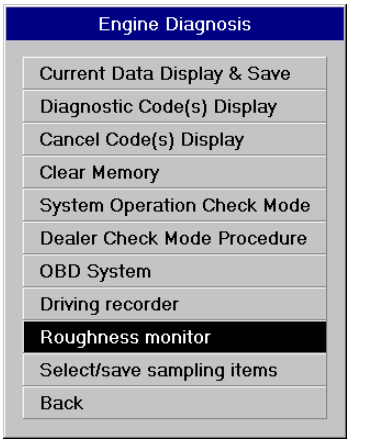
SMU-00665

*12.*This displays a compliance verification message for the system being diagnosed. Click the [OK] button.



SMU-00128

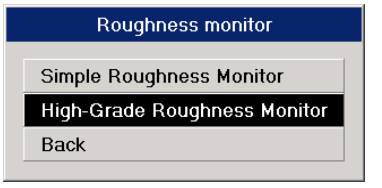
*13.*From the list of fault diagnosis items, select [Roughness Monitor] and then press the Enter key or left-click with the mouse.



SMU-00774

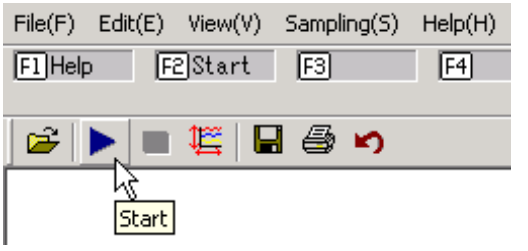
NOTE:
"Roughness Monitor" is not displayed if the pulse/analog cartridge is not installed.

*14.*From the list of diagnosis items, select [High-Grade Roughness Monitor] and then press the Enter key or left-click with the mouse.



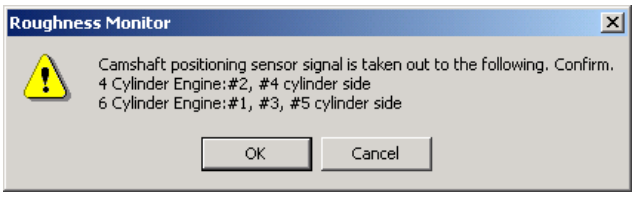
SMU-00777

*15.*This displays the High-Grade Roughness Monitor screen. Click ▶ icon on the Data List Tool bar or the F2 Start button on the Function Key Bar, or press the F2 function key on the PC keyboard. You can also start sampling by selecting "Auto Sampling" from "Sampling" in menu.



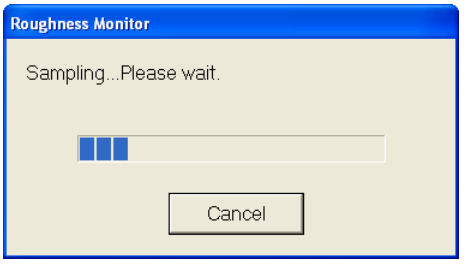
SMU-00778

*16.*This displays a verification message for the camshaft position sensor signal to be taken out. Confirm the signal to be taken out and then click the [OK] button.



SMU-00779

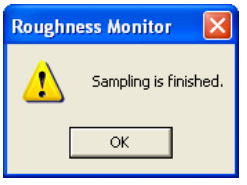
*17.*Stand by as sampling is started automatically. To cancel sampling, click the [Cancel] button. You can stop sampling also by clicking icon on the Data List Tool bar or the F2 Stop button on the Function Key Bar, or pressing the F2 function key on the PC keyboard.



SMU-00851

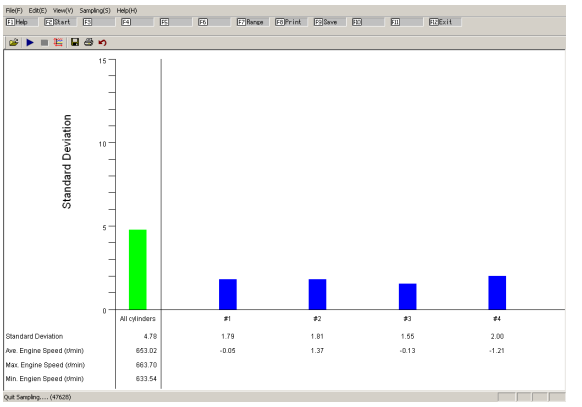
NOTE:
After dialog box above disappears, next dialog box may not appear immediately. Wait until it appears.

*18.*After sampling ends, a dialog box below will appear. Click the [OK] button.



SMU-00866

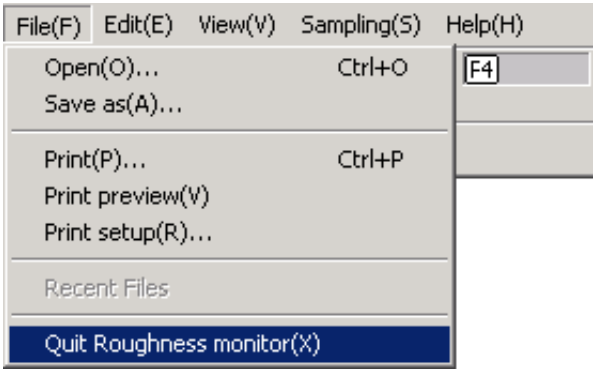
*19.*This displays the graph screen.



SMU-00782

NOTE:
Even if combustion condition is normal, extremely large standard deviation of all cylinders may occur due to variation in engine operation condition such as switching ON/OFF of radiator fan or A/C. In this case, perform sampling again.

*20.*If you want to quit Roughness Monitor, select "Quit Roughness Monitor" from "File" in menu, click icon on the Data List Tool bar or F12 Exit button on the Function Key Bar, or press the F12 function key on the PC keyboard.



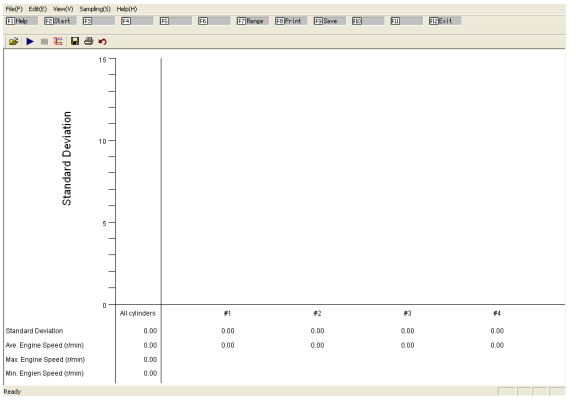
SMU-00784

Manual Sampling

Roughness Monitor can perform sampling for normal engine speed range automatically. If you want to sample other engine speed range, use Manual Sampling.

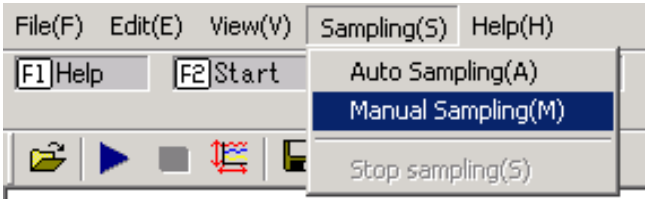
NOTE:
Perform Manual Sampling when minimum engine speed is below 400 rpm at Auto Sampling.

1. Display the High-Grade Roughness Monitor sampling screen.



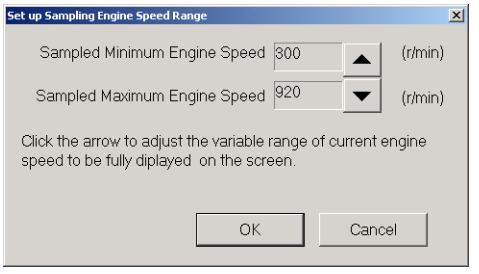
SMU-00785

2. Select “Manual Sampling” from “Sampling” in menu.



SMU-00786

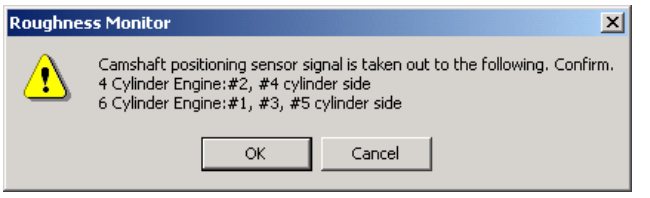
3. This displays Set up Sampling Engine Speed Range screen. Operate the arrow button to configure the engine speed range and then click the [OK] button.



SMU-00787

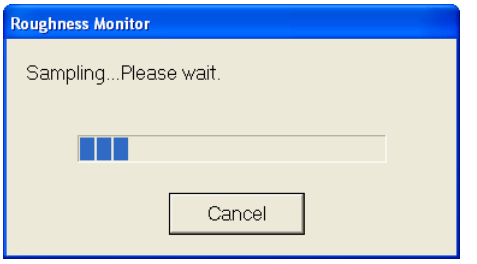
NOTE:
Set up the “Sampled Minimum Engine Speed” to 100 rpm less than minimum engine speed at Auto Sampling.

4. This displays a verification message for the camshaft position sensor signal to be taken out. Confirm the signal to be taken out and then click the [OK] button.



SMU-00779

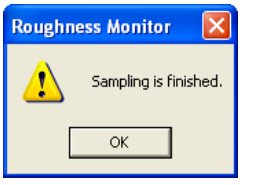
5. Stand by as sampling is started automatically. To cancel sampling, click the [Cancel] button. You can stop sampling also by clicking icon on the Data List Tool bar or the F2 Stop button on the Function Key Bar, or pressing the F2 function key on the PC keyboard.



SMU-00851

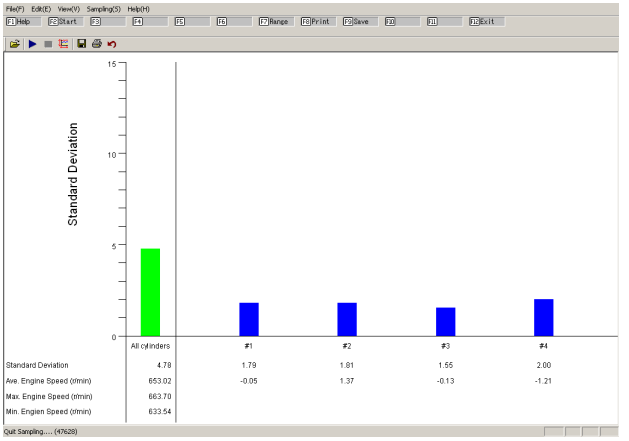
NOTE:
After dialog box above disappears, next dialog box may not appear immediately. Wait until it appears.

6. After sampling ends, a dialog box below will appear. Click the [OK] button.



SMU-00866

7. This displays the graph screen.



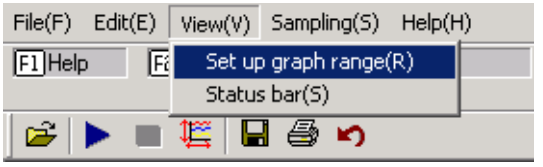
SMU-00782

Changing Graph Range

High-Grade Roughness Monitor sets the vertical axis range of the graph automatically after sampling, however you can configure the range manually.

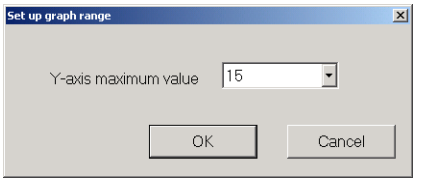
NOTE:
You can change the range at Simple Roughness Monitor using the same procedures as those described under “Current Data Display and Save”. See the description.

1. Select “Set up Graph Range” from “View” in menu. You can also select by clicking icon on the Data List Tool bar or the button on the Function Key Bar, or pressing the F7 function key on the PC keyboard.



SMU-00790

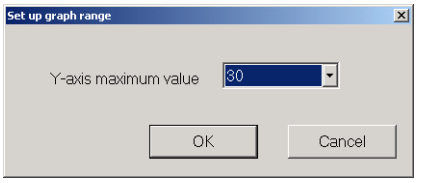
2. Click the arrow displayed in graph range setting screen.



SMU-00791

3. Select desired range and then click the [OK] button to apply the setting.

   To cancel to change the range, click the [Cancel] button.

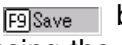


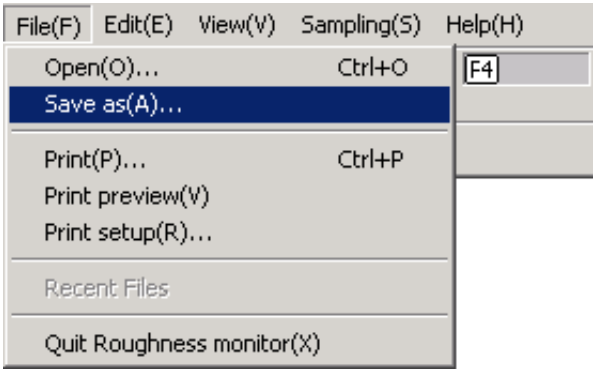
SMU-00792

Saving Sampled Data

This explains how to save the sampled data with High-Grade Roughness Monitor.

NOTE:
You can save the data at Simple Roughness Monitor using the same procedures as those described under “Current Data Display and Save”. See the description.

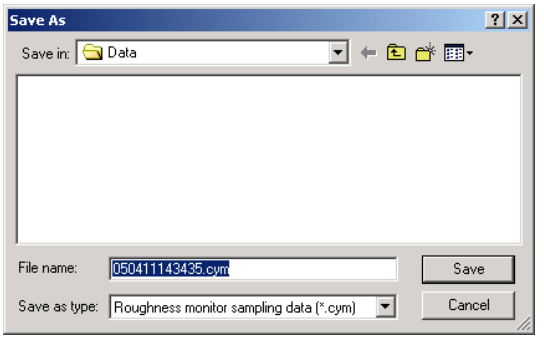
1. Select “Save as” from “File” in menu. You can also save by clicking icon on the Data List Tool bar or the  button on the Function Key Bar, or pressing the F9 function key on the PC keyboard.



SMU-00795

2. This causes the sampled data save dialog box to appear.

   The name of the data file being saved is generated automatically in accordance with the current time and date. If you want to use the generated file name as-is, click the dialog box [Save] button. If you want to change to a different file name, type in the name you want.



SMU-00796

NOTE:
Sample data files are saved in the Data folder where the PC application is installed.
To change to another storage location, specify the location you want in the Save in box of the save data dialog box.

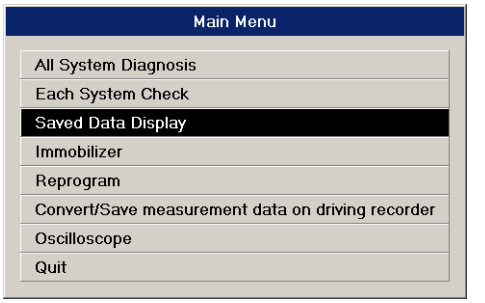
Saved Data Display

You can view the saved data by opening from Main Menu or from High-Grade Roughness Monitor.

NOTE:
To view the saved data at Simple Roughness Monitor, see “Saved Data Display”.

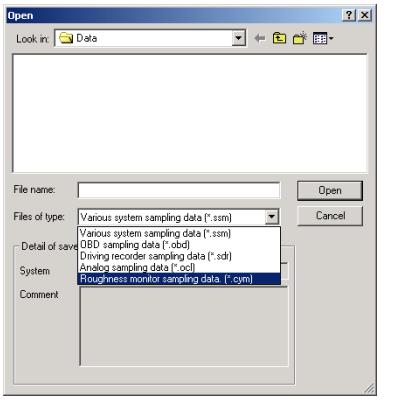
Opening from Main Menu

1. From the Main Menu, select [Saved Data Display] and then press the Enter key or left-click with the mouse.



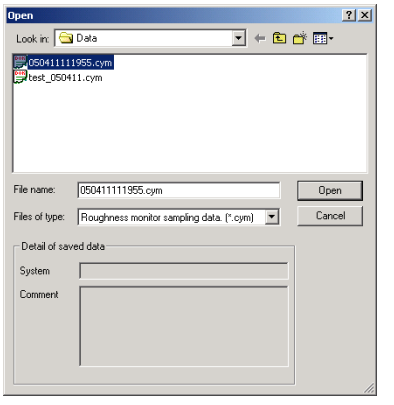
SMU-00602

2. This displays the “Open file” dialog box. Click “File type” and select {Roughness monitor sampling data (*.cym)}.



SMU-00797

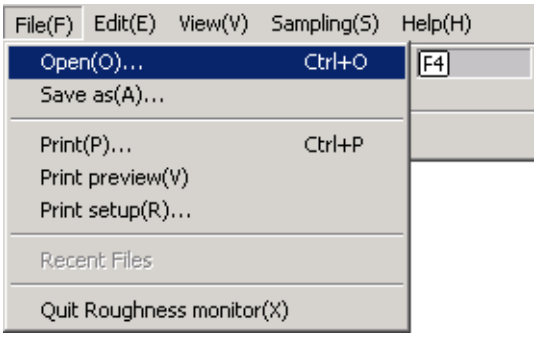
3. Select the desired file in list of files and click the [Open] button.



SMU-00798

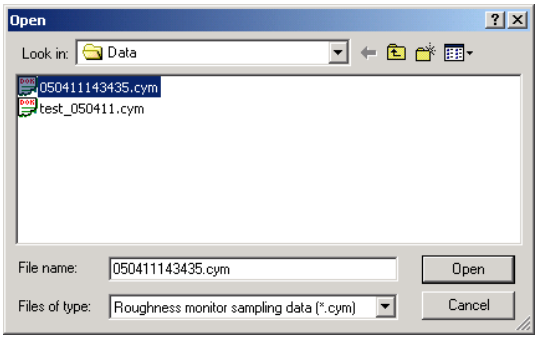
Opening from High-Grade Roughness Monitor screen

1. Display the High-Grade Roughness Monitor screen, and select “Open” from “File” in menu or click icon on the Data List Tool bar.



SMU-00799

2. This displays the “Open” dialog box. Select the desired file in list of files and click the [Open] button.



SMU-00800

SDI Stand-alone Diagnosis

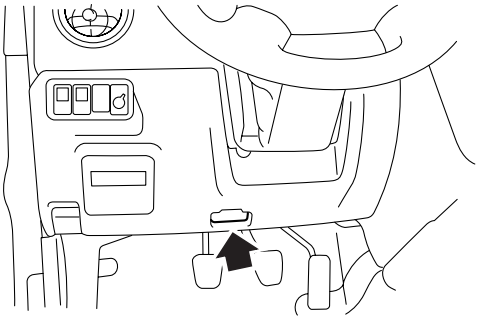
The SDI can be used for fault diagnosis in a stand-alone configuration without connecting to a PC.
You need to insert a CF card with the CF application installed on it into the card slot of the SDI in order to perform stand-alone diagnosis.

NOTE:
Be sure to turn off SDI power (the PWR LED of the SDI goes out) before installing a CF card into or removing a CF card from its card slot. Inserting or removing a CF card while SDI power is turned on runs the risk of damaging CF card contents.

Getting Ready (Starting Up the SDI in Stand-alone Mode)

1. Insert a CF card that has the CF application installed into the CF1 card slot of the SDI.
2. Connect the main connector of the diagnosis cable to the diagnosis communication connector of the SDI.
3. Connect the vehicle connector of the diagnosis cable to the vehicle's data link connector, and confirm that the PWR LED of the SDI lights.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then press the SDI [PWR] key and check again to see if the PWR LED of the SDI lights.



SMU-00113

4. Hold down the SDI [MENU] key and [C] key at the same time for at least two seconds.
5. The software version screen will appear on the display, and then it will be replaced by the Initial Menu screen.

   Use the [UP] and [DOWN] keys to select the desired item, and then press the [ENT] key.

SMU-00513

NOTE:
SDI power may turn off automatically (indicated when the PWR LED of the SDI goes out) if no SDI operation is performed for a preset period. If this happens, press the [PWR] key to turn the SDI back on.

To quit the stand-alone mode, select {Exit} on the Initial Menu screen and then press [ENT] key.

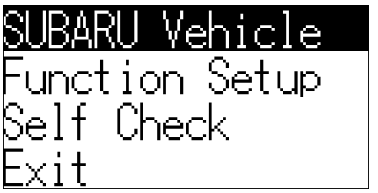
SMU-00516

All Systems Diagnosis

Selecting this item displays the fault detect status of all control system control modules for which SSMIII diagnosis is supported, and memorized diagnostic codes.
When a particular control system cannot be identified as the causes of a vehicle's problem, perform this diagnosis and use the displayed diagnostic codes to perform diagnosis.

NOTE:
- For a vehicle equipped with a cruise control system, turn on the cruise control switch before performing inspection.
- This inspection mode may not function in the case of certain vehicle models and vehicle specifications.

1. On the Initial Menu screen, use the [UP] and [DOWN] keys to select {SUBARU Vehicle}, and then press the [ENT] key.

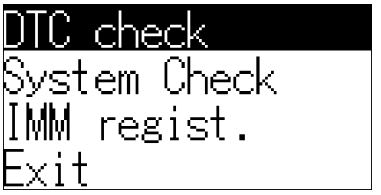


SMU-00513

2. This causes the Menu Selection screen to appear.

   Use the [UP] and [DOWN] keys to select {DTC check}, and then press the [ENT] key.

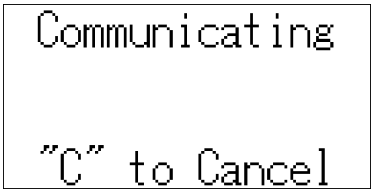
   To return to the Initial Menu screen, press the [C] key or select {Exit} and then press the [ENT] key.



SMU-00760

3. The SDI displays the screen shown below when the control system and communication system are started up.

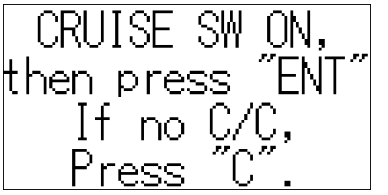
   To terminate the diagnosis operation, press the [C] key.



SMU-00420

4. The screen shown below will appear. For a vehicle equipped with a cruise control system, turn on the cruise control main switch and then press the [ENT] key. For a vehicle that does not have cruise control, simply press the [C] key.

   This screen may not be displayed in the case of certain vehicle specifications.

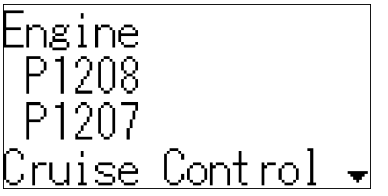


SMU-00444

5. The display shows the fault codes that are remembered by each ECM.

   Use the [UP] and [DOWN] keys to scroll screen contents.

   To exit the fault code display, press the [C] key.



SMU-00445

Diagnostic Codes Check on Each System

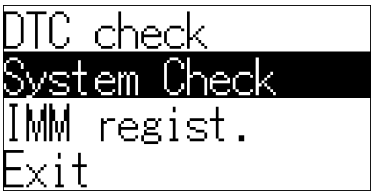
Getting Ready

This type of inspection allows selection of a particular system from among the control system for which SSMIII diagnosis is supported. Then memorized diagnostic codes and other data can be viewed on the SDI display.

1. Press the both [MENU] key and [C] key on the SDI at the same time more than two seconds.
2. The software version screen will appear on the display, and then it will be replaced by the Initial Menu screen.
   On the Initial Menu screen, use the [UP] and[DOWN] keys to select {SUBARU Vehicle}, and then press the [ENT] key.

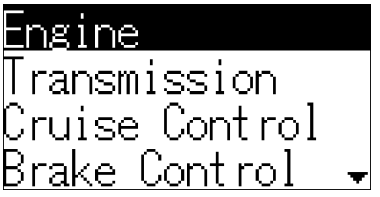
SMU-00513

3. This causes the Menu Selection screen to appear.
   Use the [UP] and [DOWN] keys to select {System Check}, and then press the [ENT] key. To return to the Initial Menu screen, press the [C] key or select {Exit} and then press the [ENT] key.



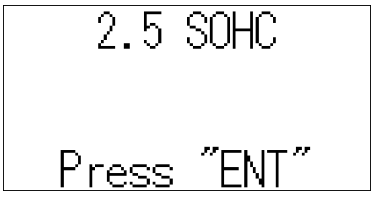
SMU-00735

4. This causes the System Selection screen to appear.
   Use the [UP] and [DOWN] keys to select {Engine}, and then press the [ENT] key. (For this example,“Engine” is selected.)
   To return to the Menu Selection screen, press the [C] key.



SMU-00447

5. This displays a compliance verification message for the system being diagnosed. Press the [ENT] key.



SMU-00448

6. This causes the Fault Diagnosis Menu screen to appear.
   Use the [UP] and [DOWN] keys to select {DTC check}, and then press the [ENT] key.
   Press [C] key to return to the System Selection screen.

SMU-01032

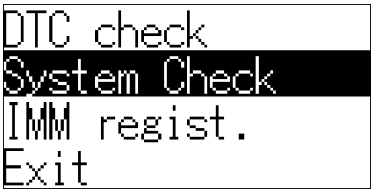
Data Display

This system allows sampling of control module input/output data of control systems for which SSMIII diagnosis is supported, and sampling of control data.

1. On the Initial Menu screen, use the [UP] and [DOWN] keys to select {SUBARU Vehicle}, and then press the [ENT] key.

SMU-00513

2. This causes the Menu Selection screen to appear.
   Use the [UP] and [DOWN] keys to select {System Check}, and then press the [ENT] key.
   To return to the Initial Menu screen, press the [C] key or select {Exit} and then press the [ENT] key.

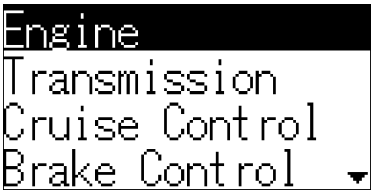


SMU-00735

3. This causes the System Selection screen to appear.

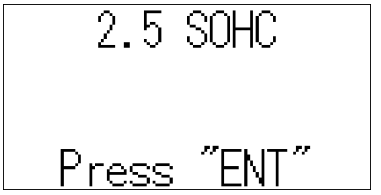
   Use the [UP] and [DOWN] keys to select {Engine}, and then press the [ENT] key. (For this example, “Engine” is selected.)

   To return to the Menu Selection screen, press the [C] key.



SMU-00447

4. This displays a compliance verification message for the system being diagnosed. Press the [ENT] key.

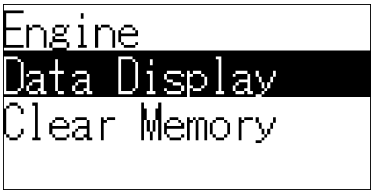


SMU-00448

5. This causes the Fault Diagnosis Menu screen to appear.

   Use the [UP] and [DOWN] keys to select {Data Display}, and then press the [ENT] key.

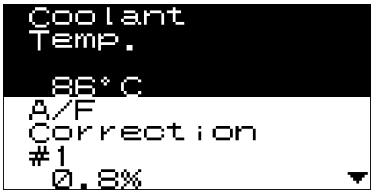
   Press [C] key to return to the System Selection screen.



SMU-00736

6. This displays the current data.

   Press [C] key to return to the Fault Diagnosis Menu screen.

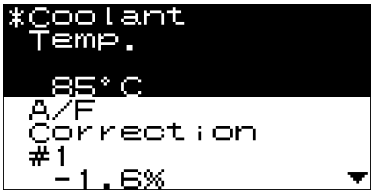


SMU-00737

Data Select Screen

The Data Select Screen can be used to select particular data from all of the data sampled and view it.

1. Select the sampled items you want to view, and press [TRG] key. This causes asterisk (*) to appear on the selected items.



SMU-00738

2. After selecting the sampled items you want to view, press the [ENT] key. This causes only sampled items with asterisk to appear.

SMU-00739

   To return to the All Data Screen, press the [ENT] key again.

NOTE:
The selected sampled items (with asterisk) are saved even if the SDI power is turned off. At the next starting up, the items will remain selected.

Saving Sampled Data

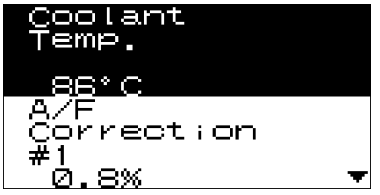
You can save sampled data on stand-alone diagnosis as well. You can save sampled data, which is stored in CF card, to hard disk of your PC in order to analyze.

NOTE:

- Sampled data saved in a CF card cannot be analyzed. For analysis, the data needs to be saved in a PC.
- Cannot save sampling data if free space on a CF card is less than 10MB. If so, delete unnecessary data in the CF card or replace it with another CF card, which has enough space.

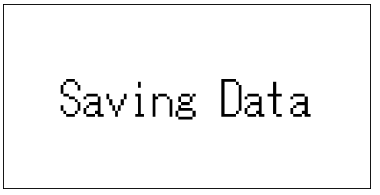
How to save in a CF card

1. Display the current data. (Engine is taken as an example.)



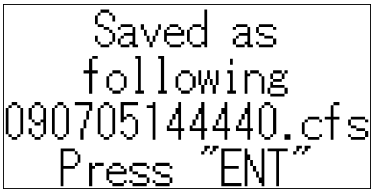
SMU-00737

2. Hold down the [MENU] key of the SDI for at least two seconds.
3. Stand by as the message below will appear on the SDI screen.



SMU-00839

4. In response to the save confirmation screen that appears, press the [ENT] key.



SMU-00840

Save data stored in a CF card to a PC.

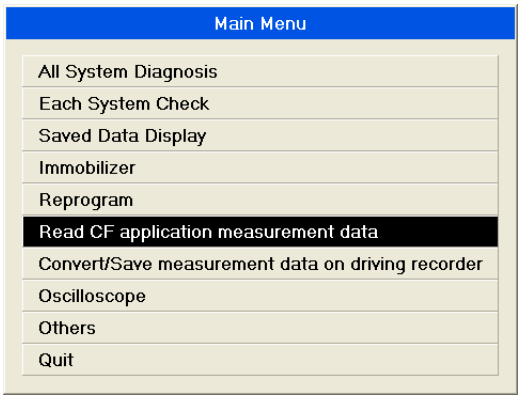
This explains how to save sampled data stored in a CF card to hard disk of your PC.
Sampled data can be read from a CF card in the card slot of the SDI or in the card slot of a PC.

NOTE:

Be sure to turn off SDI power before installing a CF card into or removing a CF card from its card slot. Inserting or removing a CF card while SDI power is turned on runs the risk of damaging CF card contents.

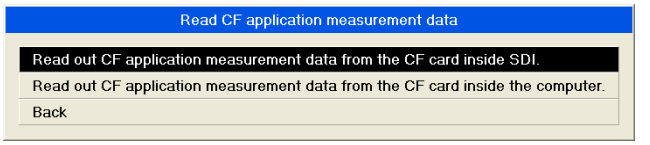
To read data from a card slot of the SDI

1. On the Main Menu, select the {Read CF application measurement data}.



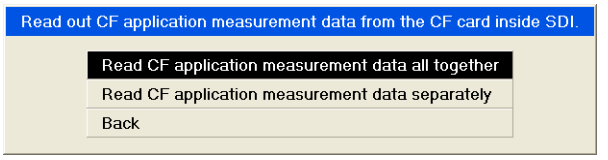
SMU-00841

2. On the Read CF application measurement data screen, select the {Read out CF application measurement data from the CF card inside SDI}.



SMU-00842

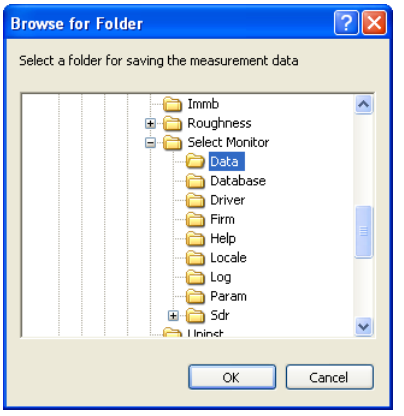
3. On the Read out CF application measurement data from the CF card inside SDI screen, select the {Read CF application measurement data all together} or {Read CF application measurement data separately}.



SMU-00843

<If you selected "Read CF application measurement data all together" in Step 3.>

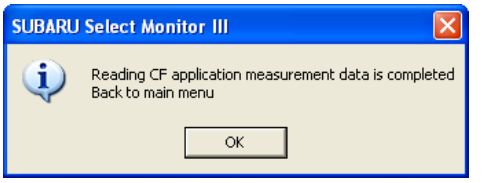
4. Select the directory to save sampled data, which was read out from the CF card. Select the desired directory, and then click the [OK] button.



SMU-00844

NOTE:
- On the initial setting, sample data files are saved in the Data folder where the PC application is installed.
- The name of the data file being saved is generated automatically in accordance with the time and date of saving in CF card.
- After the sampled data is saved in a PC, that in CF card will be deleted automatically.

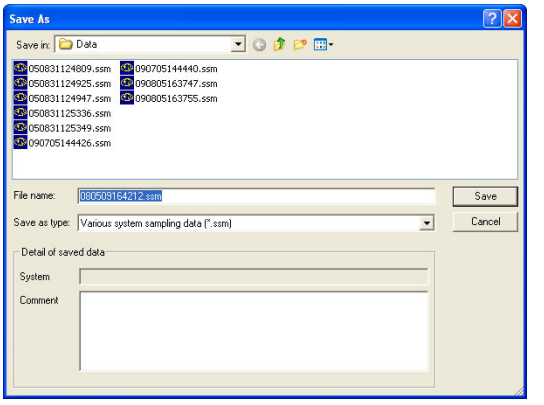
5. After all of the sampled data in the CF card are saved, a screen below will appear. Click the [OK] button.



SMU-00845

<If you selected "Read CF application measurement data separately" in Step 3.>

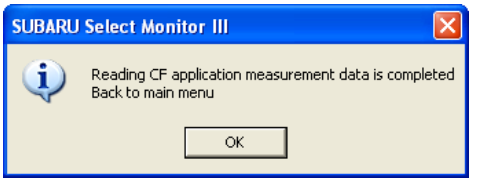
4. This causes the sampled data save dialog box to appear. The name of the data file being saved is generated automatically in accordance with the time and date of saving in CF card. If you want to use the generated file name as-is, click the dialog box [Save] button. If you want to change to a different file name, type in the name you want.



SMU-00846

NOTE:
- Sample data files are saved in the Data folder where the PC application is installed. To change to another storage location, specify the location you want in the Save in box of the save data dialog box.
- The Comment box of the Save As dialog box can be used to save general comments associated with the data or file.
- After the sampled data is saved in a PC, that in CF card will be deleted automatically.

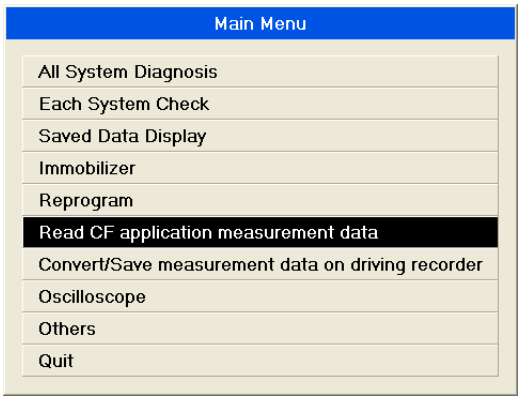
5. After all of the sampled data in the CF card are saved, a screen below will appear. Click the [OK] button.



SMU-00845

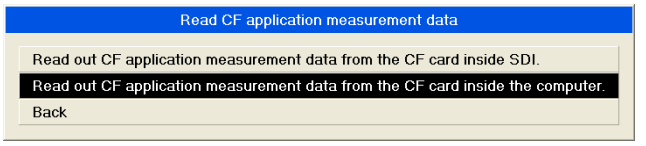
To read data from a card slot of the PC

1. On the Main Menu, select the {Read CF application measurement data}.



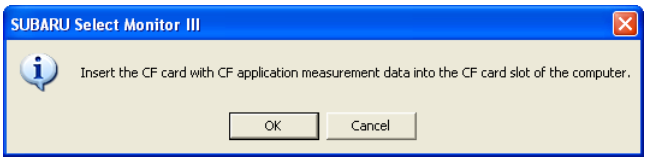
SMU-00841

2. On the Read CF application measurement data screen, select the {Read out CF application measurement data from the CF card inside the computer}.



SMU-00847

3. Insert the CF card that contains the sampling data into the card slot of the PC. Click the [OK] button.



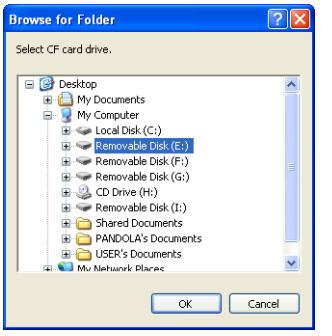
SMU-00848

NOTE:
If the PC has no CF card slot, make use of a card reader etc. to setup the CF card on the PC.

4. When the dialog box shown below appears, click the [OK] button.

SMU-00849

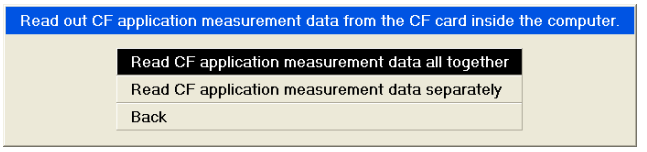
5. Select the drive where the CF card is located, and then click the [OK] button.



SMU-00850

NOTE:
If the drive which contains a CF card is not displayed at this time, restart the PC application and repeat the procedure from step 1.

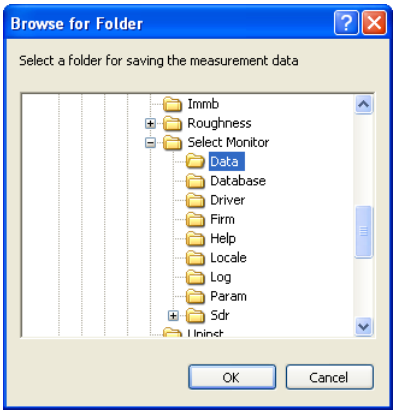
6. On the Read out CF application measurement data from the CF card inside the computer screen, select the {Read CF application measurement data all together} or {Read CF application measurement data separately}.



SMU-00852

<If you selected "Read CF application measurement data all together" in Step 6.>

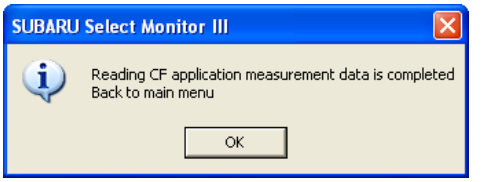
7. Select the directory to save sampled data, which was read out from the CF card. Select the desired directory, and then click the [OK] button.



SMU-00844

NOTE:
- On the initial setting, sample data files are saved in the Data folder where the PC application is installed.
- The name of the data file being saved is generated automatically in accordance with the time and date of saving in CF card.
- After the sampled data is saved in a PC, that in CF card will be deleted automatically.

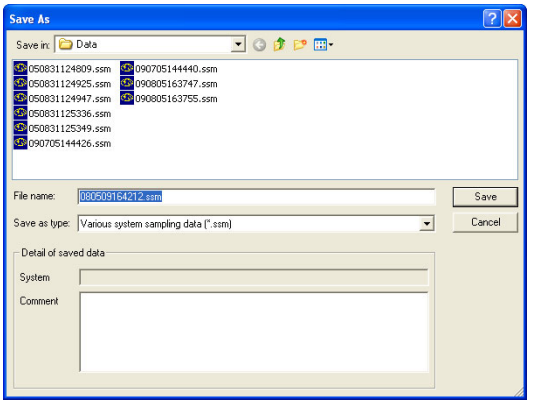
8. After all of the sampled data in the CF card are saved, a screen below will appear. Click the [OK] button.



SMU-00845

<If you selected "Read CF application measurement data separately" in Step 6.>

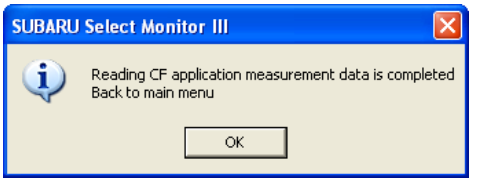
7. This causes the sampled data save dialog box to appear. The name of the data file being saved is generated automatically in accordance with the time and date of saving in CF card. If you want to use the generated file name as-is, click the dialog box [Save] button. If you want to change to a different file name, type in the name you want.



SMU-00846

NOTE:
- Sample data files are saved in the Data folder where the PC application is installed. To change to another storage location, specify the location you want in the Save in box of the save data dialog box.
- The Comment box of the Save As dialog box can be used to save general comments associated with the data or file.
- After the sampled data is saved in a PC, that in CF card will be deleted automatically.

8. After all of the sampled data in the CF card are saved, a screen below will appear. Click the [OK] button.

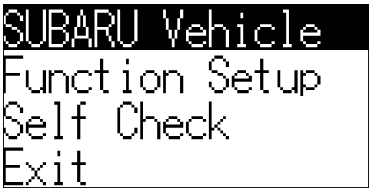


SMU-00845

Clearing Memory

Use the following procedure to delete the diagnostic codes memorized by the control modules of each system after correcting the fault.

1. On the Initial Menu screen, use the [UP] and [DOWN] keys to select {SUBARU Vehicle}, and then press the [ENT] key.

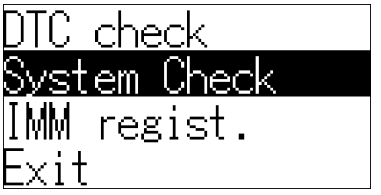


SMU-00513

2. This causes the Menu Selection screen to appear.

   Use the [UP] and [DOWN] keys to select {System Check}, and then press the [ENT] key.

   To return to the Initial Menu screen, press the [C] key or select {Exit} and then press the [ENT] key.

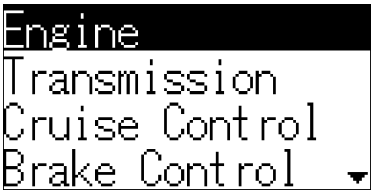


SMU-00735

3. This causes the System Selection screen to appear.

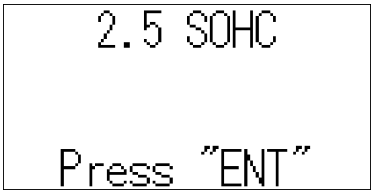
   Use the [UP] and [DOWN] keys to select {Engine}, and then press the [ENT] key. (For this example, “Engine” is selected.)

   To return to the Menu Selection screen, press the [C] key.



SMU-00447

4. This displays a compliance verification message for the system being diagnosed. Press the [ENT] key.



SMU-00448

5. This causes the Fault Diagnosis Menu screen to appear.

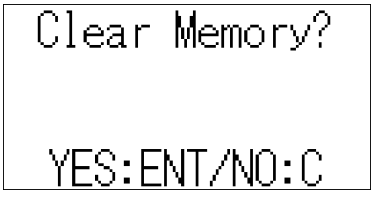
   Use the [UP] and [DOWN] keys to select {Clear Memory}, and then press the [ENT] key.

   Press [C] key to return to the System Selection screen.

SMU-00464

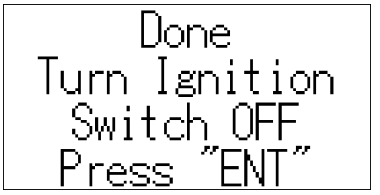
6. This causes a memory clear confirmation message to appear, and then press the [ENT] key.

   To cancel the memory clear operation, press the [C] key.



SMU-00450

7. Executing the memory clear operation causes the screen shown below to appear. In accordance with the instructions on the screen, turn off the ignition switch and then press the [ENT] key.



SMU-00451

NOTE:
There are some systems that do not have a memory clear item on the fault diagnosis menu. With such a system, the diagnostic code will disappear from the display when you turn off the vehicle's ignition switch.

Transmission System Memory Clear 2

On the fault diagnosis screen for the transmission system, [Clear Memory] and [Clear Memory 2] items may be displayed.
Selecting the [Clear Memory 2] item deletes diagnostic codes and learning control values remembered by the transmission control module.

Airbag System Memory Clear

To execute the memory clear operation in the airbag system, you must first completely service all problems. If there is even one problem remaining, the memory clear operation cannot be executed.

Body Integrated Module Function Setting (ECM Customizing)

The following procedure can be used to configure operational details, operation time, and other settings for the actuators controlled by the body integrated module.

IMPORTANT:
Make sure you perform setting operations in accordance with the Service Manual when using the unit customization function. Configuring the wrong settings can cause abnormal system operation and other problems.

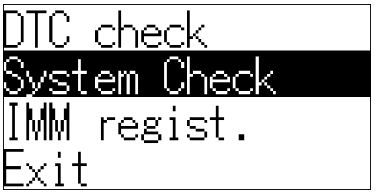
1. On the Initial Menu screen, use the [UP] and [DOWN] keys to select {SUBARU Vehicle}, and then press the [ENT] key.

SMU-00513

2. This causes the Menu Selection screen to appear.

   Use the [UP] and [DOWN] keys to select {System Check}, and then press the [ENT] key.

   To return to the Initial Menu screen, press the [C] key or select {Exit} and then press the [ENT] key.

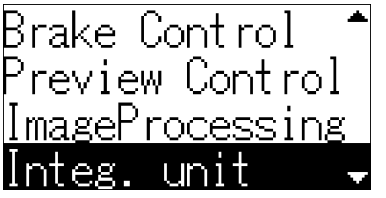


SMU-00735

3. This causes the System Selection screen to appear.

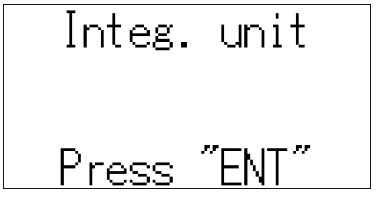
   Use the [UP] and [DOWN] keys to select {Integ. unit}, and then press the [ENT] key.

   To return to the Menu Selection screen, press the [C] key.



SMU-00740

4. This displays a compliance verification message for the system being diagnosed. Press the [ENT] key.



SMU-00741

5. This causes the Fault Diagnosis Menu screen to appear.

   Use the [UP] and [DOWN] keys to select {Customizing}, and then press the [ENT] key.

   Press [C] key to return to the System Selection screen.

SMU-00742

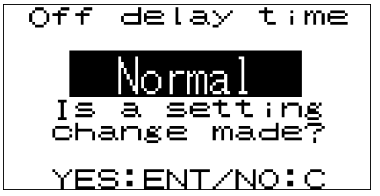
6. On the screen that appears, use the [UP] and [DOWN] keys to select the setting(s) to be configured, and then press the [ENT] key.

   Press [C] key to return to the Fault Diagnosis Menu screen.

SMU-00743

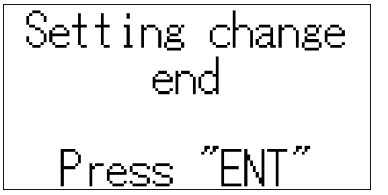
NOTE:
Please follow the instructions on the destination confirmation screen if it is appeared. (Expt. North America, the United Kingdom, Australia and some other countries.)

7. This displays a customized setting screen for the selected item(s). Use the [RIGHT] and [LEFT] keys to select the desired setting(s), and then press the [ENT] key.



SMU-00744

8. This causes a message to appear indicating that setting configuration is complete. Press the [ENT] key.



SMU-00745

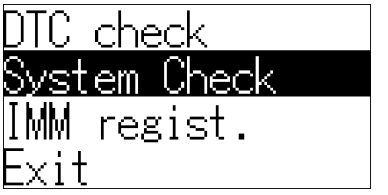
Impact Sensor

Impact Sensor sensitivity adjustment on the security system can be done by this function.
It is necessary to refer to service manuals when you do this adjustment.

1. On the Initial Menu screen, use the [UP] and [DOWN] keys to select {SUBARU Vehicle}, and then press the [ENT] key.

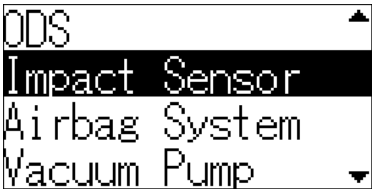
SMU-00513

2. This causes the Menu Selection screen to appear.
   Use the [UP] and [DOWN] keys to select {System Check}, and then press the [ENT] key.
   To return to the Initial Menu screen, press the [C] key or select {Exit} and then press the [ENT] key.



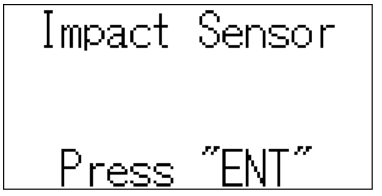
SMU-00735

3. This causes the System Selection screen to appear.
   Use the [UP] and [DOWN] keys to select {Impact Sensor}, and then press the [ENT] key.
   To return to the Menu Selection screen, press the [C] key.



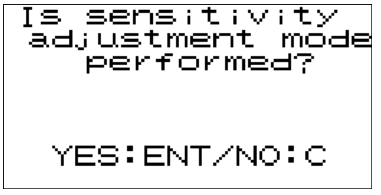
SMU-01033

4. This displays a compliance verification message for the system being diagnosed. Press the [ENT] key.



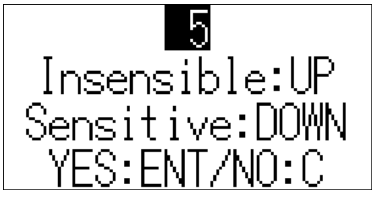
SMU-01034

5. This displays the Sensitivity Adjustment Mode execution confirmation screen. Press the [ENT] key.
   To cancel the Sensitivity Adjustment Mode execution, press the [C] key.



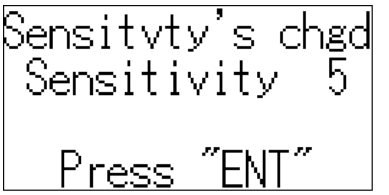
SMU-01035

6. This displays a Sensitivity Adjustment screen.
   Use the [UP] key for increasing sensitivity and the [DOWN] key for decreasing sensitivity.
   Press the [ENT] key after completing the adjustment.
   To stop the adjustment, press the [MENU] key.



SMU-01036

7. Sensitivity Adjustment confirmation screen appears. In response to this confirmation screen, press the [ENT] key.



SMU-01037

Registering the Tire Pressure Monitoring System Transmitter (ID)

The procedure below can be used to register the tire pressure monitoring system transmitter (ID). Registration of the transmitter (ID) is required after performing any one of the following repair work procedures.

- Transmitter replacement
- Tire rotation (causing change of transmitter position)
- Tire pressure monitoring control module replacement

NOTE:
Be sure to perform transmitter (ID) registration work in accordance with the Service Manual.

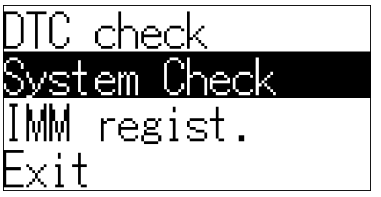
Getting Ready

Adjust the air pressure of all of the tires so they are at the standard value.

1. On the Initial Menu screen, use the [UP] and [DOWN] keys to select [SUBARU Vehicle], and then press the [ENT] key.

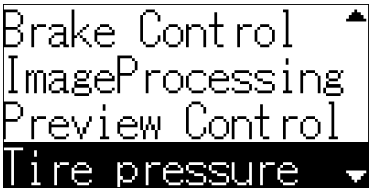
SMU-00513

2. This causes the Menu Selection screen to appear.
   Use the [UP] and [DOWN] keys to select [System Check], and then press the [ENT] key.
   To return to the Initial Menu screen, press the [C] key or select [Exit] and then press the [ENT] key.



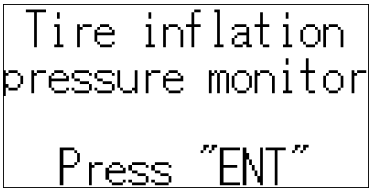
SMU-00735

3. This causes the System Selection screen to appear.
   Use the [UP] and [DOWN] keys to select [Tire pressure], and then press the [ENT] key.
   To return to the Menu Selection screen, press the [C] key.



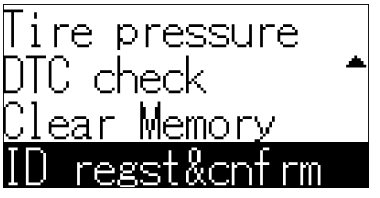
SMU-01111

4. This displays a compliance verification message for the system being diagnosed. Press the [ENT] key.



SMU-01112

5. This causes the Fault Diagnosis Menu screen to appear.
   Use the [UP] and [DOWN] keys to select [ID regst&cnfrm], and then press the [ENT] key.
   Press [C] key to return to the System Selection screen.



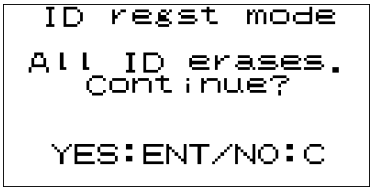
SMU-01113

ID registration

1. On the screen shown, use the [UP] or [DOWN] keys to select [ID regist], and press the [ENT] key.
   Press [C] key to return to the Fault Diagnosis Menu screen.

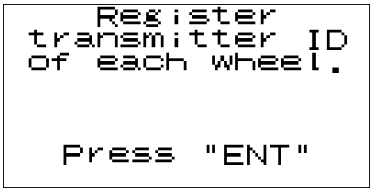
SMU-01114

2. The confirmation screen asking if you want to delete the registered transmitter ID will appear. Then press the [ENT] key.
   If you do not wish to delete the ID, press the [C] key.



SMU-01115

3. Once ID deletion is carried out, following screen will appear. Press the [ENT] key.

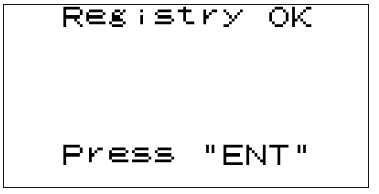


SMU-01116

4. Wheel ID registration process is shown on the screen.
   Use the [UP] and [DOWN] keys to scroll screen contents.
   The message “complete” appears when each wheel ID registration is complete.

SMU-01117

5. The screen shown below will appear if registration ends normally. Press the [ENT] key.



SMU-01118

NOTE:
Registering a transmitter ID causes the previously registered ID to be deleted.

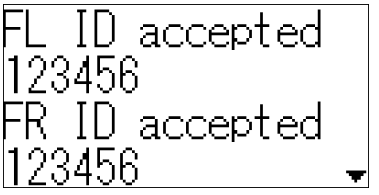
Transmitter ID Data Monitor

On the selection screen shown below, use the [UP] or [DOWN] keys to select [ID data view]. This enables you to confirm the registered ID data, and the ID data sent from the transmitter to Tire pressure monitoring control module.

SMU-01119

Transmitter ID Data Screen

Use the [UP] and [DOWN] keys to scroll screen contents.
To exit the transmitter ID display, press the [C] key.



SMU-01120

Registering the Immobilizer (Not Equipped with Keyless Access with Push Button Start System.)

WARNING:
- The security ID and registration command must be handled as confidential information and shall not be announced to outsiders.
- When wireless radios or car telephones are installed, they must be installed so that the immobilizer system is not influenced by electric waves.
- Do not operate cell phones or wireless radios or the like when either trouble diagnosis or immobilizer registration is in progress.
- During immobilizer registration, do not bring a key with a different ID close to the ignition switch. When the key is on a keychain, remove it from the chain before start of diagnosis. When there are several keys on one keychain, remove them from the keychain and use them individually for the work.
- When the engine cannot be started with a registered key, pull the ignition key from the ignition switch, wait approximately one second until the immobilizer warning lamp starts flashing, and then turn the ignition key slowly to start the engine.

1. On the Initial Menu screen, use the [UP] and [DOWN] keys to select {SUBARU Vehicle}, and then press the [ENT] key.

SMU-00513

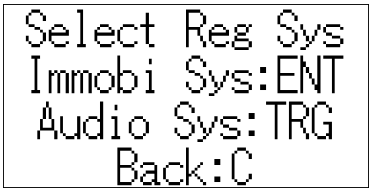
2. This causes the Menu Selection screen to appear.

   Use the [UP] and [DOWN] keys to select {IMM regist.}, and then press the [ENT] key.

   To return to the Initial Menu screen, press the [C] key or select {Exit} and then press the [ENT] key.

SMU-00746

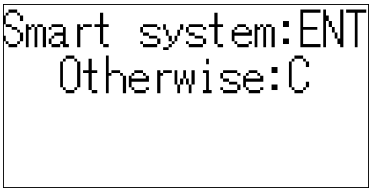
3. Press the [ENT] key if the system selection screen is displayed.



SMU-00949

NOTE:
Audio System is the specification only for the U.K.

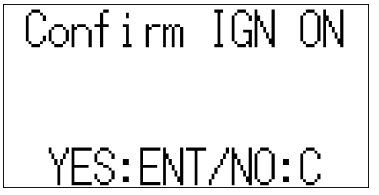
4. On the next screen, confirm the system is keyless access with push button start system. Press the [C] key.



SMU-00947

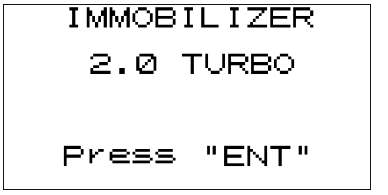
NOTE:
- The term [smart system] that appears on this screen is synonymous with the term [keyless access with push button start system] used in this text.
- The keyless access with push button start system is not equipped with some vehicles, depending on the specifications, for North America, Australia, and some other areas.

5. Press [ENT] after confirming if the ignition switch is ON, as following screen will be displayed.



SMU-00948

6. In response to the compliance verification screen that appears, press the [ENT] key.

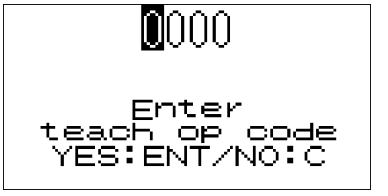


SMU-00880

7. Input the teaching operation code, and then press the [ENT] key.

   Press [C] key to return to the Menu Selection screen.

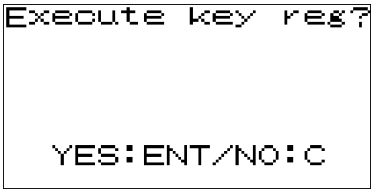
NOTE:
The [UP] and [DOWN] keys allow to input numbers. The [RIGHT] and [LEFT] keys allow to move over digits of number.



SMU-00748

8. In response to the registration mode confirmation screen that appears, press the [ENT] key.

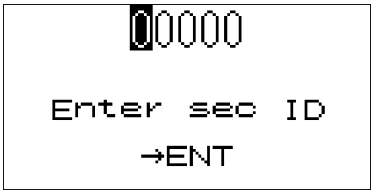
   Press [C] key to return to the command input screen.



SMU-00749

9. Input the security ID and then press the [ENT] key.

NOTE:
The [UP] and [DOWN] keys allow to input numbers. The [RIGHT] and [LEFT] keys allow to move over digits of number.

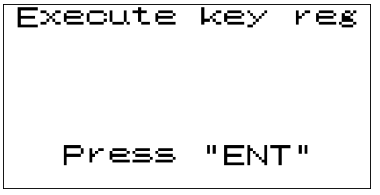


SMU-00750

10. Stand by as the security ID is being collated.

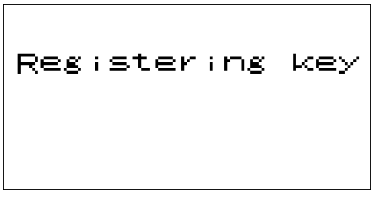
SMU-00751

11. In response to the key registration confirmation screen that appears, press the [ENT] key.



SMU-00752

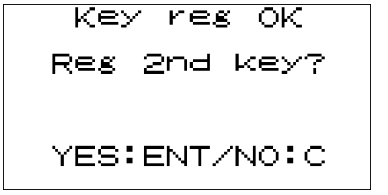
12. Stand by as the key is registered.



SMU-00753

13. The screen shown below will appear if registration ends normally.

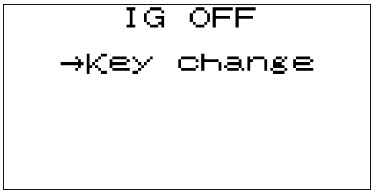
If you have another key to be registered, press the [ENT] key. If you do not have any more keys to be registered, press the [C] key and advance to step 22.



SMU-00754

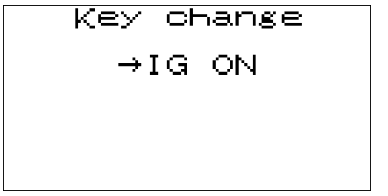
14. Turn off the ignition switch, and then change the key to one to be registered.

NOTE:
You need to change key within about 30 seconds.



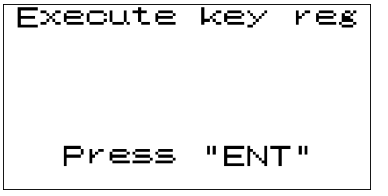
SMU-00755

15. Turn off the ignition switch and the screen shown below will appear. Insert the key you want to register into the key cylinder, and turn on the ignition switch.



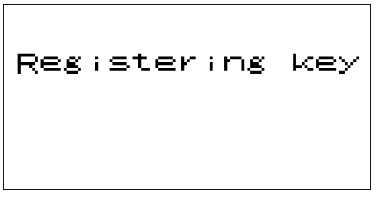
SMU-00756

16. In response to the key registration confirmation screen that appears, press the [ENT] key.



SMU-00752

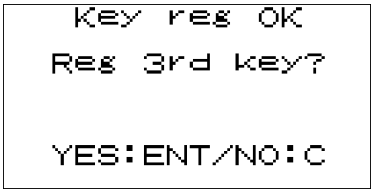
17. Stand by as the key is registered.



SMU-00753

*18.*The screen shown below will appear if registration ends normally.

If you have another key to be registered, press the [ENT] key. If you do not have any more keys to be registered, press the [C] key and advance to step 22.

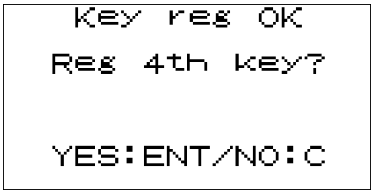


SMU-00757

*19.*Repeat steps 14 through 17.

*20.*The screen shown below will appear if registration ends normally.

If you have another key to be registered, press the [ENT] key. If you do not have any more keys to be registered, press the [C] key and advance to step 22.

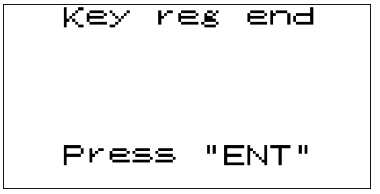


SMU-00758

*21.*Repeat steps 14 through 17.

*22.*The screen shown below will appear if registration ends normally.

Press the [ENT] key.



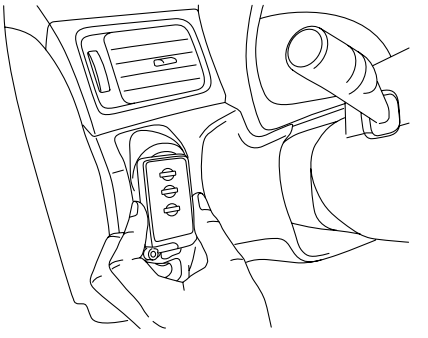
SMU-00759

*23.*After confirming that the immobilizer system is operating normally, quit the registration operation.

Registering the Immobilizer (Equipped with the Keyless Access with Push Button Start System)

WARNING:

- The security ID and registration command must be handled as confidential information and shall not be announced to outsiders.
- When you install wireless radios or car phones, make sure that mobile keys (access keys) are not influenced by their electric waves.
- Do not operate cell phones or wireless radios or the like when either trouble diagnosis or mobile key (access key) registration is in progress.
- The work of "Registering the Smart Immobilizer", "Registering the Smart ECM" and "Delete the Mobile Key (AccessKey) ID" includes the operation of holding up the mobile key (AccessKey) to the push engine switch (push-button ignition switch). Pay attention to the following when performing this operation.
  1) Confirm that the battery voltage is 11 V or more and execute each mode.
  2) When holding up the mobile key (AccessKey) to the push engine switch (push-button ignition switch), do not hold two or more mobile keys (AccessKey) at the same time, but use only one each time. (When the mobile key (AccessKey) is on a keychain, remove it from the keychain before the work.)
  3) When holding the mobile key (AccessKey) up to the push engine switch (push-button ignition switch), bring the mobile key (AccessKey) close to the push engine switch (push-button ignition switch) as shown below.



SMU-01094

(1) Let the mechanical key insertion opening of the mobile key (AccessKey) face down.

(2) Hold the Subaru ornament side to the push engine switch (push-button ignition switch) side.
(3) Bring it close until it touches the push engine switch (push-button ignition switch).

When replacing the parts for vehicles with keyless access with push button start system, always use new parts for "mobile key (AccessKey)", "collation ECM", "ID code box", "steering lock ECM", and "body integrated module", and never replace by used parts.

- If the engine cannot get started with a registered mobile key (access key), wait approximately one second until the immobilizer warning lamp starts flashing. Then try to start the engine again with the registered mobile key (access key).
- Do not place a PC within 10cm around mobile keys (access keys) and receiver antennas to avoid any malfunctions of the keyless access with push button start system.

NOTE:

- The keyless access with push button start system is not equipped with some vehicles, depending on the specifications, for North America, Australia, and some other areas.
- Carry out the "Registering the Smart Immobilizer' procedure in case you replace a mobile key (access key), collation ECM, body integrated module or a combination meter.
- In case of replacing a steering lock ECM, execute the "Registering the Smart ECM" procedure.
- When replacing the ID code box, "Registering the Engine ECM" and "Registering the Smart ECM" must be performed in this order.
- In case of replacing an engine ECM, execute the "Registering the Engine ECM" procedure.
- Immobilizer registration is NOT necessary when a power supply ECM or a gateway ECM is replaced.
- When turning the ignition on, press the push engine switch (push-button ignition switch) twice without stepping on the brake pedal. Power supply status changes to ACC-ON, IG-ON, OFF, ACC-ON accordingly, as pressing the push engine switch (push-button ignition switch) once.
- At the time of engine start, press the push engine switch (push-button ignition switch) once with the brake pedal depressed in case of an AT vehicle. In case of an MT vehicle, press the push engine switch (push-button ignition switch) once with the clutch pedal depressed.
- When performing either one of the operations shown below, perform also the "registration of the remote control engine starter".
  1) Installing remote control engine starter
  2) Replacing remote control engine starter
  3) Replacing collation ECM of a vehicle equipped with remote control engine starter
- At the time of replacement of the body integrated module and the combination meter, perform "Registering the Smart Immobilizer".
- When a mobile key (AccessKey) has been lost, perform "Delete the Mobile Key (AccessKey) ID". When all mobile keys (AccessKey) have been lost, refer to "Keyless access with push button start system: Correspondence table at the time of parts failure".
- There is a possibility that registry fails due to poor connector coupling of cabin antenna. In such case, please repair electrical contacts of keyless access indoor antenna (front) before performing immobilizer registry. Keyless access indoor antenna (front) is the only antenna used in immobilizer registry.

Registering the Smart Immobilizer

You can get the immobilizer registered for vehicles equipped with keyless access with push button start system.

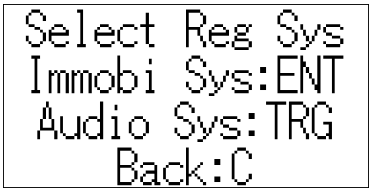
1. On the Initial Menu screen, use the [UP] and [DOWN] keys to select {SUBARU Vehicle}, and then press the [ENT] key.

SMU-00513

2. This causes the Menu Selection screen to appear.
   Use the [UP] and [DOWN] keys to select {IMM regist.}, and then press the [ENT] key. To return to the Initial Menu screen, press the [C] key or select {Exit} and then press the [ENT] key.

SMU-00746

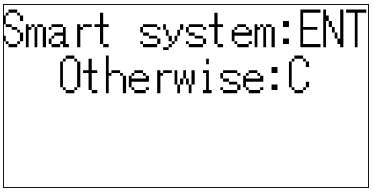
3. Press the [ENT] key if the system selection screen is displayed.



SMU-00949

NOTE:
Audio System is the specification only for the U.K.

4. On the next screen, confirm the system is keyless access with push button start system. Press the [ENT] key.

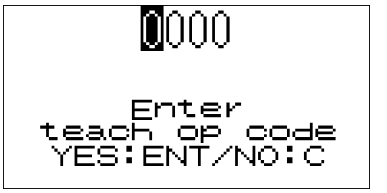


SMU-00947

NOTE:
The term [Smart system] that appears on this screen is synonymous with the term [keyless access with push button start system] used in this text.

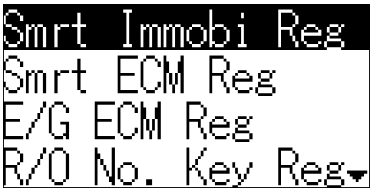
5. Input the teaching operation code, and then press the [ENT] key. Press [C] key to return to the Menu Selection screen.

NOTE:
The [UP] and [DOWN] keys allow to input numbers. The [RIGHT] and [LEFT] keys allow to move over digits of number.



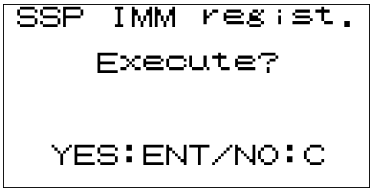
SMU-00950

6. The registration mode selection screen appears. Use the [UP] and [DOWN] keys to select {Smrt Immobi Reg}, and then press the [ENT] key.



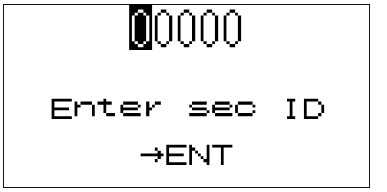
SMU-00951

7. In response to the registration mode confirmation screen that appears, press the [ENT] key.



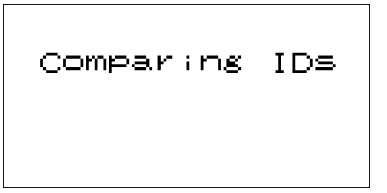
SMU-00952

8. Input the security ID and then press the [ENT] key.



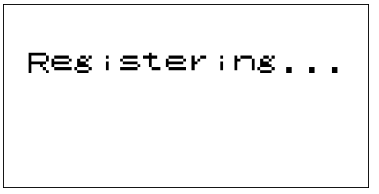
SMU-00953

9. Stand by as the security ID is being collated.



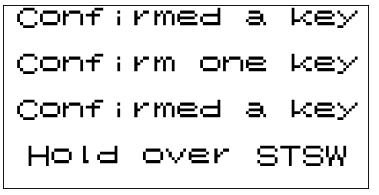
SMU-00954

*10.*Wait until the smart immobilizer is then being registered.



SMU-00955

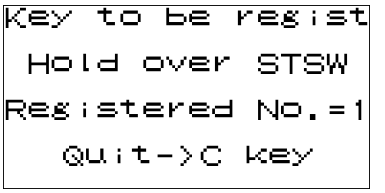
*11.*The dialog box to confirm already registered mobile keys (access keys) appears. Hold one of those mobile keys (access keys) over the push engine switch (push-button ignition switch).
After the buzzer sounds once, move the mobile key (AccessKey) away from the push engine switch (push-button ignition switch) and go to the next step.



SMU-00956

NOTE:
- When holding the mobile key (AccessKey) up to the push engine switch (push-button ignition switch), bring the mobile key (AccessKey) close to the push engine switch (push-button ignition switch) as shown below.
  1) Let the mechanical key insertion opening of the mobile key (AccessKey) face down.
  2) Hold the Subaru ornament side to the push engine switch (push-button ignition switch) side.
  3) Bring it close until it touches the push engine switch (push-button ignition switch).
- The procedure to hold a mobile key (access key) over the push engine switch (push-button ignition switch) has to be done within 30 seconds after the screen above appears.

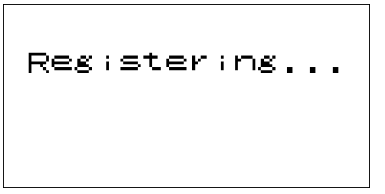
*12.*When screen displays mobile key (access key) registration mode shown below, hold one mobile key (access key) you wish to register additionally over the push engine switch (push-button ignition switch).



SMU-00957

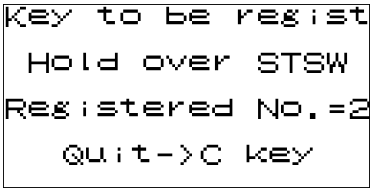
NOTE:
- When the buzzer has sounded twice, the work of holding the mobile key (AccessKey) up has been completed, but for 10 seconds after the work, the mobile key (AccessKey) should be kept inside the vehicle (near the select lever).
- For registration of the next mobile key (AccessKey), the previously registered mobile key (AccessKey) should be removed from the vehicle.
- Do not press the [C] key until you finish registering all of the mobile keys (access keys).
- The procedure to hold a mobile key (access key) over the push engine switch (push-button ignition switch) has to be done within 30 seconds after the screen above appears.

*13.*Stand by as the mobile key (access key) is being registered.



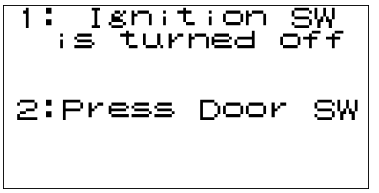
SMU-00955

*14.*Once the registration ends normally, the [Registered No.] increases by one as you can see on the screen below.
If you have another mobile key (access key) to be registered, repeat steps 12 through 13. If you do not have any more mobile keys (access keys) to be registered, press the [C] key and advance to step 15.



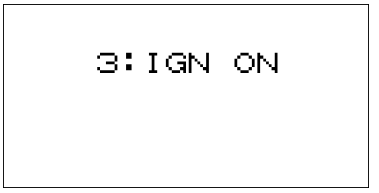
SMU-00958

*15.*Once following screen appears, turn the push engine switch (push-button ignition switch) off. Then open or close the vehicle's door, depending on its status.



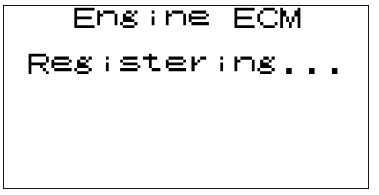
SMU-00959

*16.*Then following screen appears. Turn the ignition on.



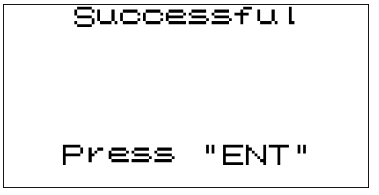
SMU-00960

*17.*Stand by as the registration to the engine ECM is being completed.



SMU-00961

*18.*The screen shown below will appear if registration ends normally. Press the [ENT] key.



SMU-00962

*19.*After confirming that the keyless access with push button start system is operating normally, quit the registration operation.

NOTE:
Depending on the replacement part, a different screen from the screen shown in this item may be displayed. In such a case, perform the work following the on-screen instructions.

Registering the Smart ECM

You can get smart-related ECM registered in the keyless access with push button start system.

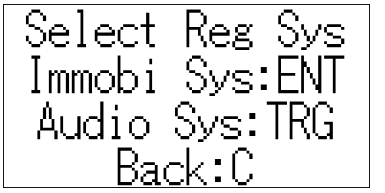
1. On the Initial Menu screen, use the [UP] and [DOWN] keys to select {SUBARU Vehicle}, and then press the [ENT] key.

SMU-00513

2. This causes the Menu Selection screen to appear.
Use the [UP] and [DOWN] keys to select {IMM regist.}, and then press the [ENT] key. To return to the Initial Menu screen, press the [C] key or select {Exit} and then press the [ENT] key.

SMU-00746

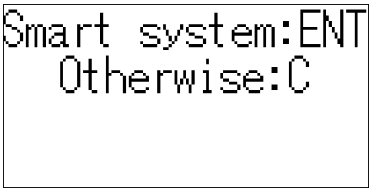
3. Press the [ENT] key if the system selection screen is displayed.



SMU-00949

NOTE:
Audio System is the specification only for the U.K.

4. On the next screen, confirm the system is keyless access with push button start system. Press the [ENT] key.



SMU-00947

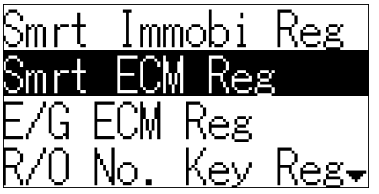
NOTE:
The term [Smart system] that appears on this screen is synonymous with the term [keyless access with push button start system] used in this text.

5. Input the teaching operation code, and then press the [ENT] key. Press [C] key to return to the Menu Selection screen.

NOTE:
The [UP] and [DOWN] keys allow to input numbers. The [RIGHT] and [LEFT] keys allow to move over digits of number.

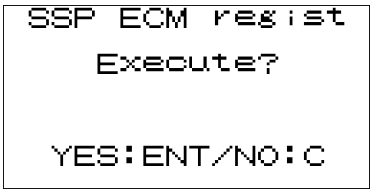
SMU-00950

6. The registration mode selection screen appears. Use the [UP] and [DOWN] keys to select {Smrt ECM Reg}, and then press the [ENT] key.



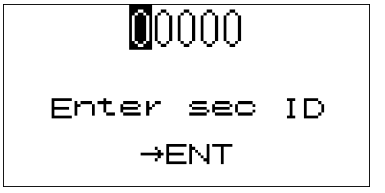
SMU-00963

7. In response to the registration mode confirmation screen that appears, press the [ENT] key.



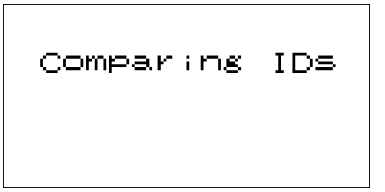
SMU-00964

8. Input the security ID and then press the [ENT] key.



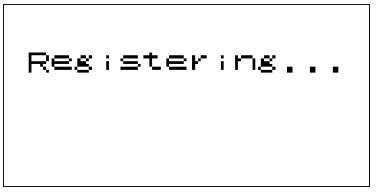
SMU-00953

9. Stand by as the security ID is being collated.



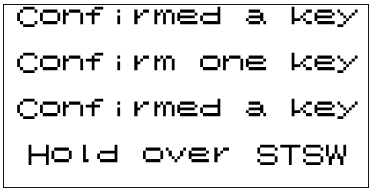
SMU-00954

10. Wait until the smart ECM is then being registered.



SMU-00955

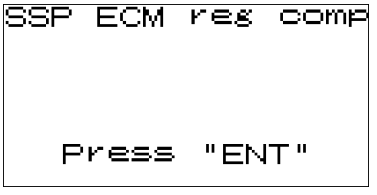
*11.*The dialog box to confirm already registered mobile keys (access keys) appears. Hold one of those mobile keys (access keys) over the push engine switch (push-button ignition switch).
After the buzzer sounds once, move the mobile key (AccessKey) away from the push engine switch (push-button ignition switch) and go to the next step.



SMU-00956

NOTE:
- When holding the mobile key (AccessKey) up to the push engine switch (push-button ignition switch), bring the mobile key (AccessKey) close to the push engine switch (push-button ignition switch) as shown below.
  1) Let the mechanical key insertion opening of the mobile key (AccessKey) face down.
  2) Hold the Subaru ornament side to the push engine switch (push-button ignition switch) side.
  3) Bring it close until it touches the push engine switch (push-button ignition switch).
- The procedure to hold a mobile key (access key) over the push engine switch (push-button ignition switch) has to be done within 30 seconds after the screen above appears.

*12.*Smart ECM registration is then automatically executed. When the registration ends normally, the following screen appears. Press the [ENT] key.



SMU-00965

*13.*After confirming that the keyless access with push button start system is operating normally, quit the registration operation.

Registering the Engine ECM

You can get engine ECM registered in the keyless access with push button start system.

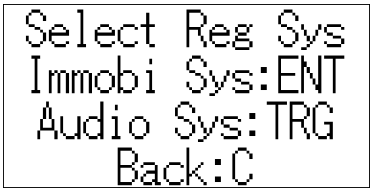
1. On the Initial Menu screen, use the [UP] and [DOWN] keys to select {SUBARU Vehicle}, and then press the [ENT] key.

SMU-00513

2. This causes the Menu Selection screen to appear. Use the [UP] and [DOWN] keys to select {IMM regist.}, and then press the [ENT] key. To return to the Initial Menu screen, press the [C] key or select {Exit} and then press the [ENT] key.

SMU-00746

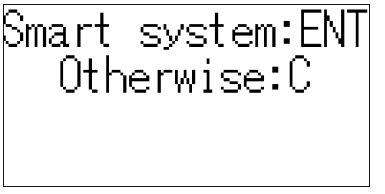
3. Press the [ENT] key if the system selection screen is displayed.



SMU-00949

NOTE:
Audio System is the specification only for the U.K.

4. On the next screen, confirm the system is keyless access with push button start system. Press the [ENT] key.



SMU-00947

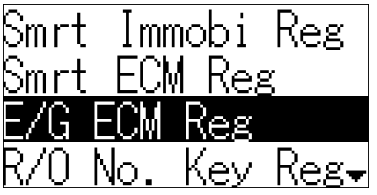
NOTE:
The term [Smart system] that appears on this screen is synonymous with the term [keyless access with push button start system] used in this text.

5. Input the teaching operation code, and then press the [ENT] key. Press [C] key to return to the Menu Selection screen.

NOTE:
The [UP] and [DOWN] keys allow to input numbers. The [RIGHT] and [LEFT] keys allow to move over digits of number.

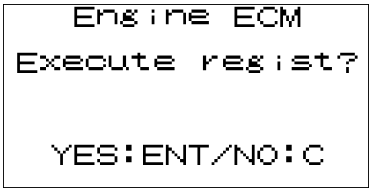
SMU-00950

6. The registration mode selection screen appears. Use the [UP] and [DOWN] keys to select {E/G ECM Reg}, and then press the [ENT] key.



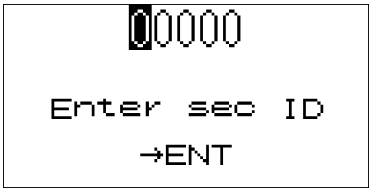
SMU-00966

7. In response to the registration mode confirmation screen that appears, press the [ENT] key.



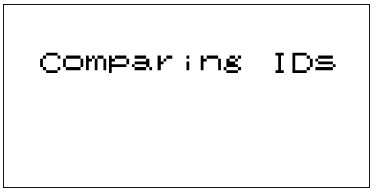
SMU-00967

8. Input the security ID and then press the [ENT] key.



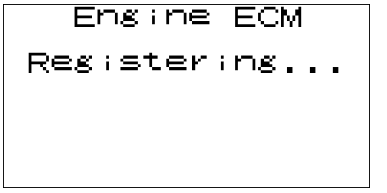
SMU-00953

9. Stand by as the security ID is being collated.



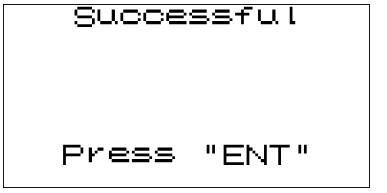
SMU-00954

10. Wait until the engine ECM is then being registered.



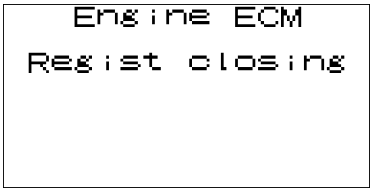
SMU-00968

11. The screen shown below will appear if registration ends normally. Press the [ENT] key.



SMU-00962

12. After the screen shown below appears, wait until the Initial Menu screen shows up again.



SMU-00969

13. After confirming that the keyless access with push button start system is operating normally, quit the registration operation.

Readout the Number of Mobile Key (Access Key) Registration

The number of mobile keys (access keys) currently registered on the vehicle can be read.

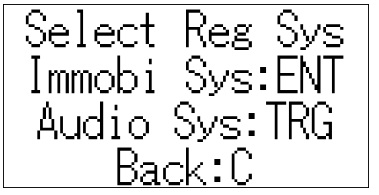
1. On the Initial Menu screen, use the [UP] and [DOWN] keys to select {SUBARU Vehicle}, and then press the [ENT] key.

SMU-00513

2. This causes the Menu Selection screen to appear.
   Use the [UP] and [DOWN] keys to select {IMM regist.}, and then press the [ENT] key. To return to the Initial Menu screen, press the [C] key or select {Exit} and then press the [ENT] key.

SMU-00746

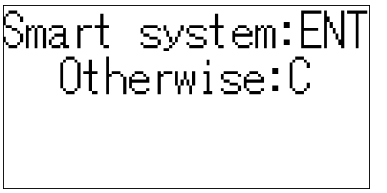
3. Press the [ENT] key if the system selection screen is displayed.



SMU-00949

NOTE:
Audio System is the specification only for the U.K.

4. On the next screen, confirm the system is keyless access with push button start system. Press the [ENT] key.



SMU-00947

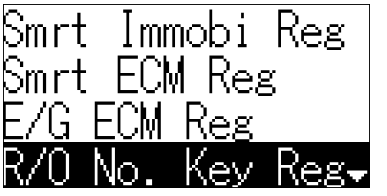
NOTE:
The term [Smart system] that appears on this screen is synonymous with the term [keyless access with push button start system] used in this text.

5. Input the teaching operation code, and then press the [ENT] key. Press [C] key to return to the Menu Selection screen.

NOTE:
The [UP] and [DOWN] keys allow to input numbers. The [RIGHT] and [LEFT] keys allow to move over digits of number.

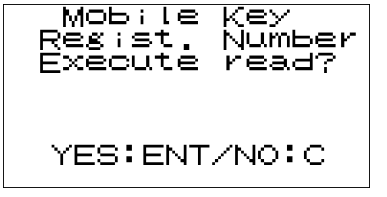
SMU-00950

6. The registration mode selection screen appears. Use the [UP] and [DOWN] keys to select {R/O No. Key Reg}, and then press the [ENT] key.



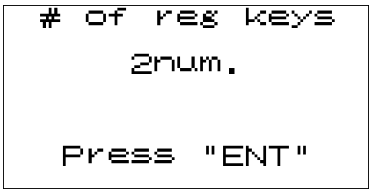
SMU-00970

7. On the mobile key (access key) registration number display mode confirmation screen that appears, press the [ENT] key.



SMU-00971

8. The number of mobile keys (access keys) currently registered will be displayed. After pressing the [ENT] key, the screen will return to the Initial Menu screen.



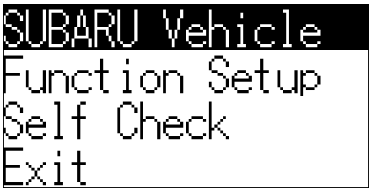
SMU-00972

Delete the Mobile Key (Access Key) ID

Unnecessary mobile key (access key) ID registered on the keyless access with push button start system can be deleted. In this procedure, the necessary ID will not be deleted.

NOTE:
You cannot delete all of mobile key (access key) ID by this function. The ID of a mobile key (access key) placed over the push engine switch (push-button ignition switch) will not be deleted.

1. On the Initial Menu screen, use the [UP] and [DOWN] keys to select {SUBARU Vehicle}, and then press the [ENT] key.

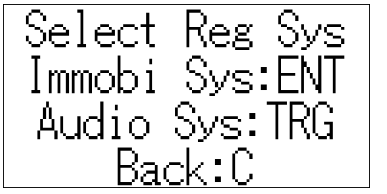


SMU-00513

2. This causes the Menu Selection screen to appear.
   Use the [UP] and [DOWN] keys to select {IMM regist.}, and then press the [ENT] key. To return to the Initial Menu screen, press the [C] key or select {Exit} and then press the [ENT] key.

SMU-00746

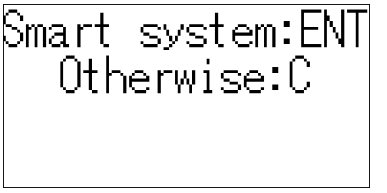
3. Press the [ENT] key if the system selection screen is displayed.



SMU-00949

NOTE:
Audio System is the specification only for the U.K.

4. On the next screen, confirm the system is keyless access with push button start system. Press the [ENT] key.

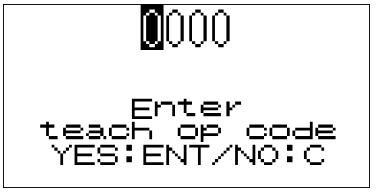


SMU-00947

NOTE:
The term [Smart system] that appears on this screen is synonymous with the term [keyless access with push button start system] used in this text.

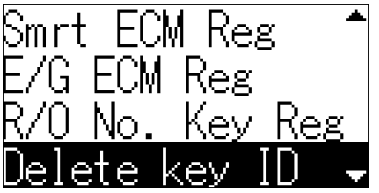
5. Input the teaching operation code, and then press the [ENT] key. Press [C] key to return to the Menu Selection screen.

NOTE:
The [UP] and [DOWN] keys allow to input numbers. The [RIGHT] and [LEFT] keys allow to move over digits of number.



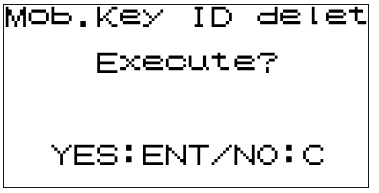
SMU-00950

6. The registration mode selection screen appears. Use the [UP] and [DOWN] keys to select {Delete key ID}, and then press the [ENT] key.



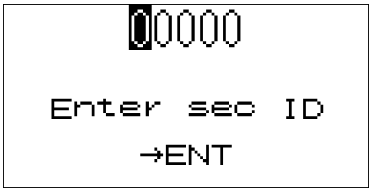
SMU-00973

7. On the mobile key (access key) ID deletion mode confirmation screen that appears, press the [ENT] key.



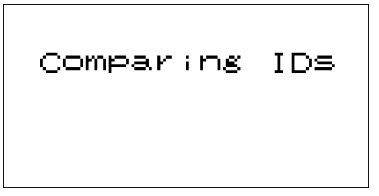
SMU-00974

8. Input the security ID and then press the [ENT] key.



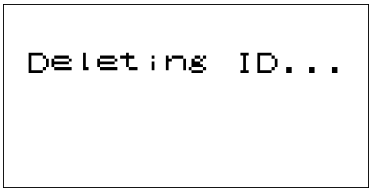
SMU-00953

9. Stand by as the security ID is being collated.



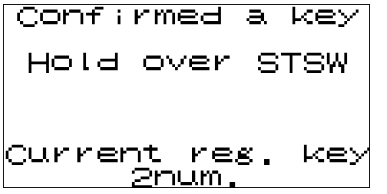
SMU-00975

10. Wait until the mobile key (access key) ID is then being deleted.



SMU-00976

11. As the number of registered mobile keys (access keys) confirmation screen will be displayed, place one of the registered mobile keys (access keys), the key, which you do not want to delete the ID, over the push engine switch (push-button ignition switch).
After the buzzer sounds once, move the mobile key (AccessKey) away from the push engine switch (push-button ignition switch) and go to the next step.

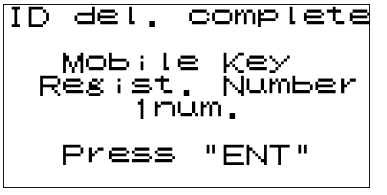


SMU-00977

NOTE:

- The ID of a mobile key (access key) placed over the push engine switch (push-button ignition switch) will only be left.
- When holding the mobile key (AccessKey) up to the push engine switch (push-button ignition switch), bring the mobile key (AccessKey) close to the push engine switch (push-button ignition switch) as shown below.
  1) Let the mechanical key insertion opening of the mobile key (AccessKey) face down.
  2) Hold the Subaru ornament side to the push engine switch (push-button ignition switch) side.
  3) Bring it close until it touches the push engine switch (push-button ignition switch).
- The procedure to hold a mobile key (access key) over the push engine switch (push-button ignition switch) has to be done within 30 seconds after the screen above appears.

12. The screen shown below will appear if mobile key (access key) ID deletion ends normally. Press the [ENT] key.



SMU-00978

13. Complete this procedure after confirming if the keyless access with push button start system works properly by using a mobile key (access key), which has the ID not deleted.

Registering the Remote Control Engine Starter

You can get remote control engine starter registered in the keyless access with push button start system.

NOTE:
Remote control engine starter is the specification only for the Japan.

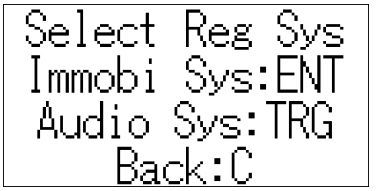
1. On the Initial Menu screen, use the [UP] and [DOWN] keys to select {SUBARU Vehicle}, and then press the [ENT] key.

SMU-00513

2. This causes the Menu Selection screen to appear.
   Use the [UP] and [DOWN] keys to select {IMM regist.}, and then press the [ENT] key. To return to the Initial Menu screen, press the [C] key or select {Exit} and then press the [ENT] key.

SMU-00746

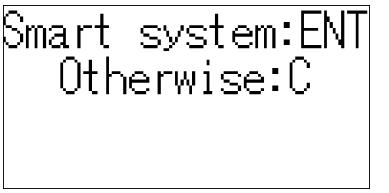
3. Press the [ENT] key if the system selection screen is displayed.



SMU-00949

NOTE:
Audio System is the specification only for the U.K.

4. On the next screen, confirm the system is keyless access with push button start system. Press the [ENT] key.

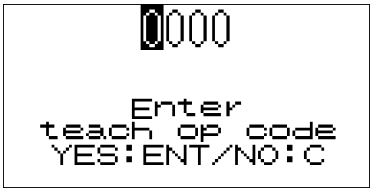


SMU-00947

NOTE:
The term [Smart system] that appears on this screen is synonymous with the term [keyless access with push button start system] used in this text.

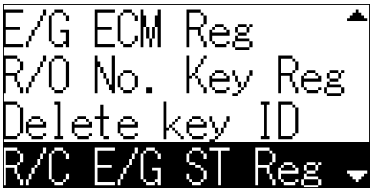
5. Input the teaching operation code, and then press the [ENT] key. Press [C] key to return to the Menu Selection screen.

NOTE:
The [UP] and [DOWN] keys allow to input numbers. The [RIGHT] and [LEFT] keys allow to move over digits of number.



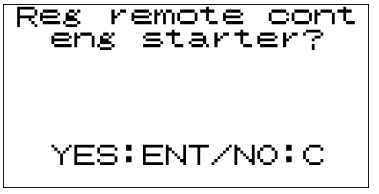
SMU-00950

6. The registration mode selection screen appears. Use the [UP] and [DOWN] keys to select {R/C E/G ST Reg}, and then press the [ENT] key.



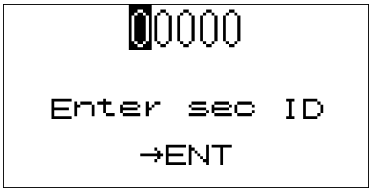
SMU-00979

7. In response to the registration mode confirmation screen that appears, press the [ENT] key.



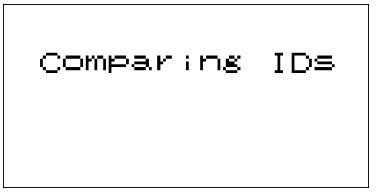
SMU-00980

8. Input the security ID and then press the [ENT] key.



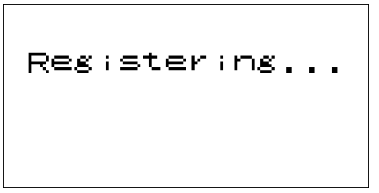
SMU-00953

9. Stand by as the security ID is being collated.



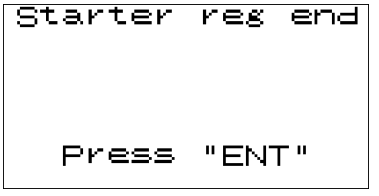
SMU-00954

10. Wait until the remote control engine starter is then being registered.



SMU-00955

11. The screen shown below will appear if remote control engine starter registration ends normally. Press the [ENT] key.



SMU-00981

12. After confirming that the keyless access with push button start system and remote control engine starter is operating normally, quit the registration operation.

Configuring SDI Functions

1. On the Initial Menu screen, use the [UP] and [DOWN] keys to select {Function Setup}, and then press the [ENT] key.

SMU-00514

2. This causes the Menu Selection screen to appear.

   Use the [UP] and [DOWN] keys to select the desired item, and then press the [ENT] key.

   To return to the Initial Menu screen, press the [C] key.

SMU-00452

1) Setting the Date and Time

This item provides a means for configuring the date and time setting of the SDI built-in clock.

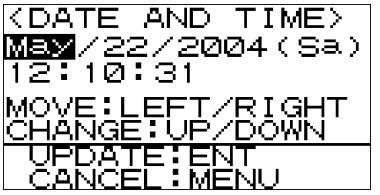
(1) On the Menu Selection screen, use the [UP] and [DOWN] keys to select {Date and Time}, and then press the [ENT] key.

SMU-00452

(2) This displays the DATE AND TIME screen. The following setting items are displayed from left to right: <Month>, <Day>, <Year>, <Hour>, <Minute>, <Second>. Use the [LEFT] and [RIGHT] keys to select the desired item, and then use the [UP] and [DOWN] keys to change the selected setting.
After configuring the settings, press the [ENT] key.

To cancel the setting procedure, press the [MENU] key.

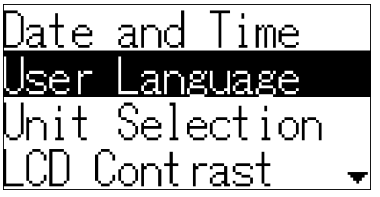
NOTE:
The day of the week setting is configured automatically in accordance with the date that set.



SMU-00352

2) Selecting a User Language
This item can be used to select the display language for SDI screens.

(1) On the Menu Selection screen, use the [UP] and [DOWN] keys to select {User Language}, and then press the [ENT] key.



SMU-00466

(2) This causes the Language Selection screen to appear. Use the [UP] and [DOWN] keys to select the desired language, and then press the [ENT] key.
To return to the Menu Selection screen, press the [C] key.

SMU-00453

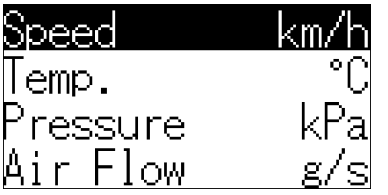
NOTE:
The display language is set to English regardless of the preset language when the SDI power is turned on with the [C] key of the SDI held down.

3) Selecting Measurement Units
This item specifies the numeric unit for values displayed on SDI screens.

(1) On the Menu Selection screen, use the [UP] and [DOWN] keys to select {Unit Selection}, and then press the [ENT] key.

SMU-00467

(2) This causes the Unit Selection screen to appear. Use the [UP] and [DOWN] keys to select the desired measurement item, and then use the [LEFT] and [RIGHT] keys to change its measurement unit. Finally press the [ENT] key.
To return to the Menu Selection screen, press the [C] key.



SMU-00454

4) Adjusting Display Contrast
The contrast of the LCD can be adjusted to make its contents easier to view.

(1) On the Menu Selection screen, use the [UP] and [DOWN] keys to select {LCD Contrast}, and then press the [ENT] key.

SMU-00468

(2) This causes the LCD CONTRAST screen to appear.
Use the [UP] and [DOWN] keys to adjust display contrast to the desired level, and then press the [ENT] key.

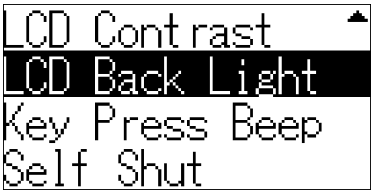
To cancel the setting or to return to the Menu Selection screen, press the [MENU] key.

NOTE:
You can check display contrast by pressing the [TRG] key on the keypad to turn off the LCD backlight. To turn the LCD backlight back on, press the [TRG] key again.

SMU-00355

5) Setting the Backlight Time
The LCD backlight turns off automatically if no SDI operation is performed for a preset period. This setting specifies length of time of the preset period.

(1) On the Menu Selection screen, use the [UP] and [DOWN] keys to select {LCD Back Light}, and then press the [ENT] key.



SMU-00469

(2) This displays the BACKLIGHT TIME screen.
Use the [UP] and [DOWN] keys to change the backlight time setting, and then press the [ENT] key.

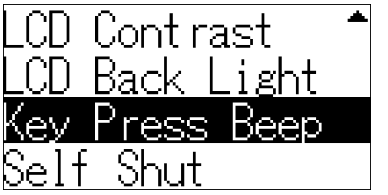
To cancel the setting or to return to the Menu Selection screen, press the [MENU] key.

SMU-00354

NOTE:
- Selecting OFF turns off the LCD backlight.
- Selecting FOREVER keeps the LCD backlight turned on.

6) Turning Key Press Beep On and Off
This setting turns the SDI key operation confirmation buzzer on and off.

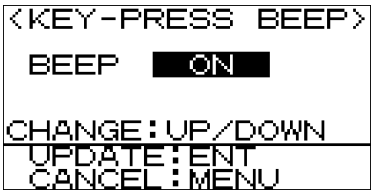
(1) On the Menu Selection screen, use the [UP] and [DOWN] keys to select {Key Press Beep}, and then press the [ENT] key.



SMU-00470

(2) This causes the KEY-PRESS BEEP screen to appear.
Use the [UP] and [DOWN] keys to select on or off for the key press beep, and then press the [ENT] key.

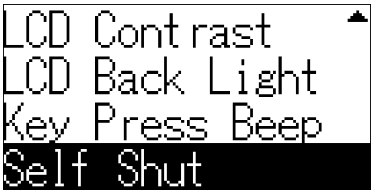
To cancel the setting or to return to the Menu Selection screen, press the [MENU] key.



SMU-00356

7) Setting the Self-Shutoff Time
This item provides a means for configuring the SDI self-shutoff time setting.

(1) On the Menu Selection screen, use the [UP] and [DOWN] keys to select {Self Shut}, and then press the [ENT] key.



SMU-00471

(2) This displays the SELFSHUT TIME screen.
Use the [UP] and [DOWN] keys to change the time setting to shut off SDI power automatically, and then press the [ENT] key.

To cancel the setting or to return to the Menu Selection screen, press the [MENU] key.

SMU-00353

NOTE:
Selecting OFF turns off the SDI self shutdown feature.
Note that turning off SDI self shutdown runs the risk of running down the vehicle's battery.

Performing SDI Self-diagnosis

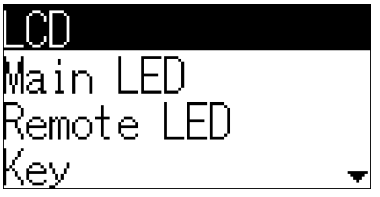
1. On the Initial Menu screen, use the [UP] and [DOWN] keys to select {Self Check}, and then press the [ENT] key.

SMU-00515

2. This causes the Menu Selection screen to appear.

Use the [UP] and [DOWN] keys to select the desired item, and then press the [ENT] key.

To return to the Initial Menu screen, press the [C] key.



SMU-00455

NOTE:
Take the required corrective measures immediately if you discover an abnormality when using SDI self-diagnosis.

LCD CHECK

The items on this screen can be used to check the LCD dots, draw area, contrast, and backlight.
Use the [UP] and [DOWN] keys to select the desired item, and then press the [ENT] key.
To return to the Menu Selection screen, press the [C] key.

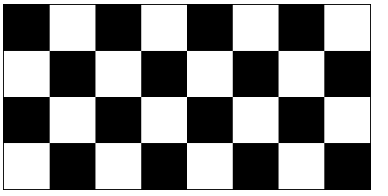
SMU-00456

1.LCD DOT CHECK

This item checks LCD dots. Press any key on the key pad.

SMU-00521

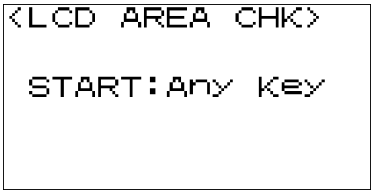
This causes the black and white areas of the display to flash alternately, which makes it possible to check whether LCD dots turn on and off normally.
An LCD dot is defective if a black dot remains black within a white area, or if a white dot remains white within a black area.
After checking LCD dots, press the [ENT] key.



SMU-00326

2. LCD AREA CHECK

This item checks the LCD draw area. Press any key on the key pad.



SMU-00522

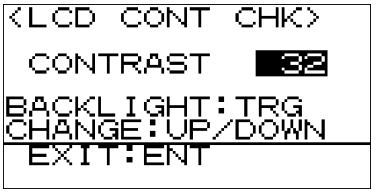
Confirm that a black border appears on all four sides of the display, and then press the [ENT] key.

SMU-00328

3. LCD CONTRAST CHECK

This item checks whether LCD display contrast can be adjusted. Pressing the [UP] key makes LCD contrast darker, while the [DOWN] key makes LCD contrast lighter.
After checking whether contrast can be adjusted, press the [ENT] key.

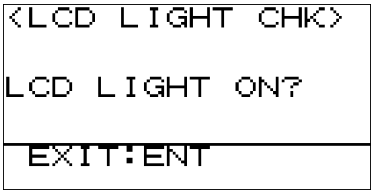
NOTE:
You can check display contrast without backlighting by pressing the [TRG] key on the keypad to turn off the LCD backlight. To turn the LCD backlight back on, press the [TRG] key again.



SMU-00329

4. LCD BACKLIGHT CHECK

After checking the LCD backlight, press the [ENT] key.



SMU-00330

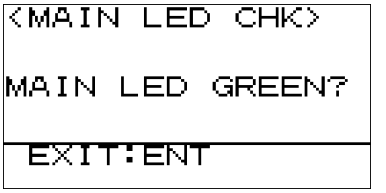
MAIN LED CHECK

The items on this screen can be used to check if the SIG LED of the SDI lights or flashes red or green in accordance with the status of the SDI. This check confirms the operational status of the SIG LED.
Use the [UP] and [DOWN] keys to select the desired item on the Menu Selection screen, and then press the [ENT] key.
To return to the Menu Selection screen, press the [C] key.

SMU-00457

1. MAIN LED (Green) CHECK

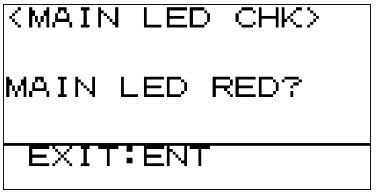
After confirming that the SIG LED repeats a pattern of four green flashes followed by 10 seconds of steady green lighting, press the [ENT] key.



SMU-00332

2. MAIN LED (Red) CHECK

After confirming that the SIG LED repeats a pattern of four red flashes followed by 10 seconds of steady red lighting, press the [ENT] key.



SMU-00333

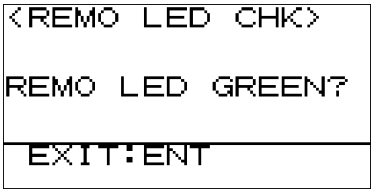
REMOTE LED CHECK

The items on this screen can be used to check if the LED on the driving recorder remote box lights or flashes green or red. This check confirms the operational status of the SIG LED.
Use the [UP] and [DOWN] keys to select the desired item on the Remote LED Check screen, and then press the [ENT] key.
To return to the Menu Selection screen, press the [C] key.

SMU-00458

1. REMOTE LED (Green) CHECK

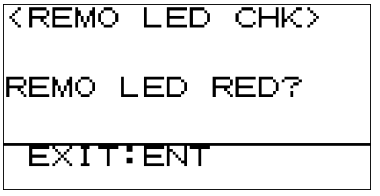
After confirming that the LED repeats a pattern of four green flashes followed by 10 seconds of steady green lighting, press the [ENT] key.



SMU-00335

2. REMOTE LED (Red) CHECK

After confirming that the LED repeats a pattern of four green flashes followed by 10 seconds of steady green lighting, press the [ENT] key.



SMU-00336

KEY IN CHECK

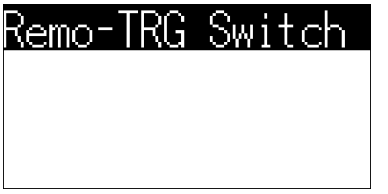
This item checks SDI keypad operation.
Key names appear on the display in the following sequence: UP → DOWN → RIGHT → LEFT → ENT → TRG → C → MENU.
Key operation is normal if the next key operation prompt screen appears when you press a key other than [MENU].
If the check reveals an abnormality, press the [MENU] key to exit the check procedure.

SMU-00337

REMOTE SWITCH CHECK

1. This item checks operation of the trigger (TRG) switch, which is a driving recorder remote box.

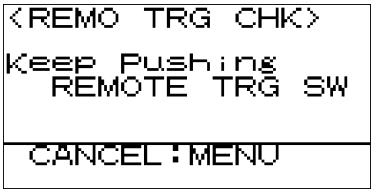
   To check operation of the trigger switch, press the [ENT] key.



SMU-00459

2. Operate the trigger switch as instructed by the messages that appear on the display. If “CHECK OK!” or “CHECK NG!” appears, press the [ENT] key.

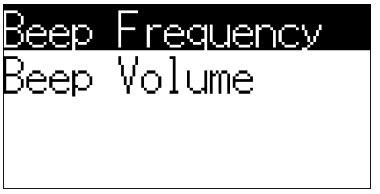
   To return to the SELF CHECK screen, press the [MENU] key.



SMU-00339

BEEP CHECK

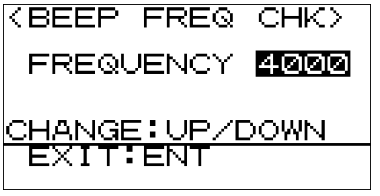
This item checks the frequency and the volume of the SDI buzzer. Use the [UP] and [DOWN] keys to select the desired item on the beep check screen, and then press the [ENT] key.
To return to the Menu Selection screen, press the [C] key.



SMU-00460

1. BEEP FREQUENCY CHECK

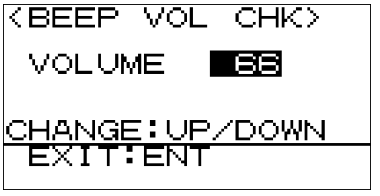
This item can be used to check buzzer operation and the buzzer frequency.
Selecting it displays the current buzzer frequency setting. Press the [UP] key to raise the buzzer frequency, or the [DOWN] key to lower the buzzer frequency.
After checking the buzzer frequency, press the [ENT] key.



SMU-00341

2. BEEP VOLUME CHECK

This item can be used to check buzzer operation and adjust its volume.
Selecting this item displays the current buzzer volume level. Press the [UP] key to increase buzzer volume, or the [DOWN] key to decrease buzzer volume.
After checking the buzzer volume, press the [ENT] key.



SMU-00342

RAM CHECK

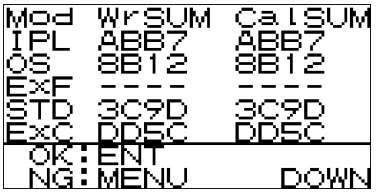
This item executes a SDI self-check of the SDI built-in RAM, and displays the result.
When completion of the self-diagnosis is indicated by “CHECK OK!” or “CHECK NG” on the display, press the [ENT] key.

SMU-00343

ROM CHECK

This item executes an SDI self-check of the SDI built-in ROM, and displays the result.
Check the display after the self-check is complete.
ROM is normal if the hexadecimal values that appear under “WrSUM” and “CalSUM” on the display are identical.
After checking ROM, press the [ENT] key.

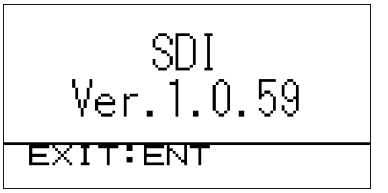
NOTE:
Use the [UP] and [DOWN] keys to scroll screen contents.



SMU-00344

VERSION CHECK

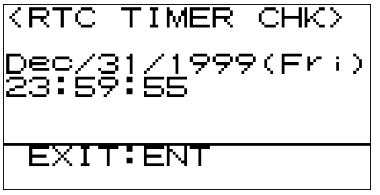
This item provides a means for checking the SDI software version. Make sure the version that appears during data communication is the same as the version shown on the version check screen.
After checking the version, press the [ENT] key.



SMU-00523

CLOCK IC CHECK

This item provides a means to check whether the date and time setting operation of the SDI built-in clock is correct.
Check to make sure that the year, month, day, day of the week, hour, minute, and second indicators at the bottom of the display change to Jan/01/2000 (Sat) 00:00:00.
After checking the clock, press the [ENT] key.



SMU-00350

NOW TIME CHECK

This item displays the current date and time setting of the SDI built-in clock.
To return to the Menu Selection screen, press the [ENT] key.

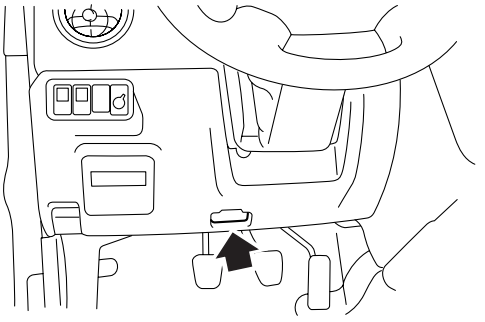
SMU-00347

SDI System Menu

The SDI System Menu can be used to perform diagnosis of SDI LCD, LED, keypad, and buzzer operation, and self-diagnosis of SDI memory. This menu also can be used to configure the settings of the SDI built-in clock, the self-shutoff time, display brightness and contrast, and the key operation confirmation buzzer.

Getting Ready (Starting Up the SDI in the System Mode)

1. Plug the main connector of the diagnosis cable into the SDI diagnosis communication connector, and secure it in place with the two screws.



SMU-00113

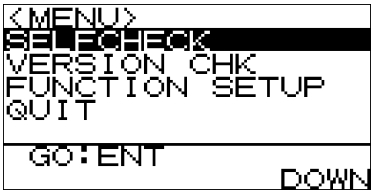
2. After pressing the SDI [MENU] key, plug the vehicle connector of the diagnosis cable into the vehicle data link connector, and then check to make sure that the PWR LED of the SDI lights.

NOTE:
SDI power will turn on automatically when the diagnosis cable is connected to the vehicle. If the PWR LED of the SDI does not light, turn on the vehicle's ignition switch or start the engine, and then check if the PWR LED lights when you press the SDI [PWR] key while holding down the SDI [MENU] key.

3. The software version screen will appear on the display, and then it will be replaced by the system MENU screen.

   Use the [UP] and [DOWN] keys to select the desired item, and then press the [ENT] key.

   To quit the system mode, select [QUIT] on the [MENU] screen.



SMU-00322

NOTE:
SDI power may turn off automatically if no SDI operation is performed for a preset period. This is indicated when the PWR LED goes out.
If this happens, hold down the [MENU] key press the [PWR] key while holding down the [MENU] key to turn the SDI back on.

SELF CHECK (SDI Self-check)

Selecting {SELFCHECK} on the MENU screen causes the SELF CHECK MENU to appear on the display. Use the [UP] and [DOWN] keys to select the desired item, and then press the [ENT] key.
To return to the system MENU screen, press the [MENU] key.

SMU-00323

NOTE:
Take the required repair immediately, if you discover an abnormality when using SDI self-diagnosis.

LCD CHECK

The LCD CHECK items provide tools for checking the display for defective LCD dots, and the draw area, contrast, and the backlight of the LCD.
Use the [UP] and [DOWN] keys to select the desired item on the LCD CHECK screen, and then press the [ENT] key.
To return to the SELF CHECK screen, press the [MENU] key.

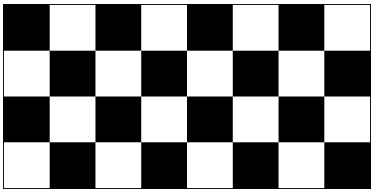
SMU-00324

1. LCD DOT CHECK

This item checks the display for defective LCD dots. Press any key on the key pad.

SMU-00521

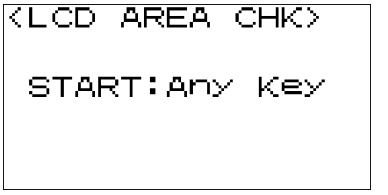
This causes the black and white areas of the display to flash alternately, which makes it possible to check whether LCD dots turn on and off normally.
An LCD dot is defective if a black dot remains black within a white area, or if a white dot remains white within a black area.
After checking the LCD dots, press the [ENT] key.



SMU-00326

2. LCD AREA CHECK

This item checks the LCD draw area. Press any key on the key pad.



SMU-00522

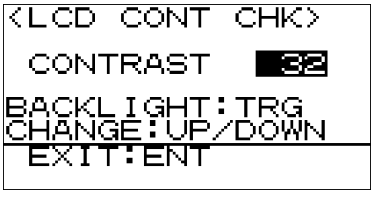
Check to make sure that a black border appears along the four edges of the display.
After checking the LCD draw area, press the [ENT] key.

SMU-00328

3. LCD CONT CHECK

This item adjusts the contrast of the LCD display.
Pressing the [UP] key makes LCD contrast darker, while the [DOWN] key makes LCD contrast lighter.
After checking the LCD contrast, press the [ENT] key.

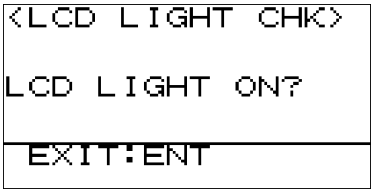
NOTE:
You can check display contrast by pressing the [TRG] key on the keypad to turn off the LCD backlight. To turn the LCD backlight back on, press the [TRG] key again.



SMU-00329

4. LCD BACKLIGHT CHECK

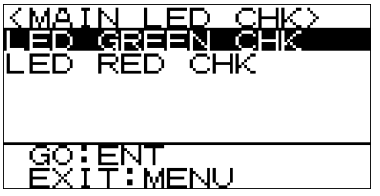
This item checks whether the LCD backlight is lit.
After checking the LCD backlight, press the [ENT] key.



SMU-00330

MAIN LED CHECK

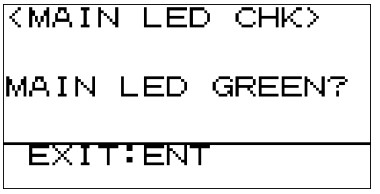
This item checks if the SIG LED lights or flashes red or green in accordance with the status of the SDI. This check confirms the operational status of the SIG LED.
Use the [UP] and [DOWN] keys to select the desired item on the MAIN LED CHECK screen, and then press the [ENT] key.
To return to the SELF CHECK screen, press the [MENU] key.



SMU-00331

1. LED GREEN CHECK

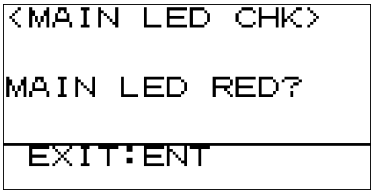
This item checks whether the SIG LED repeats a pattern of four green flashes followed by 10 seconds of steady green lighting.
After checking the main LED (green), press the [ENT] key.



SMU-00332

2. LED RED CHECK

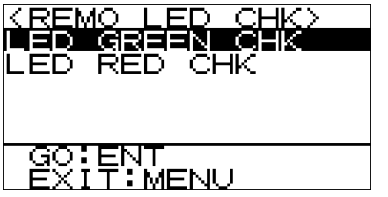
This item checks whether the SIG LED repeats a pattern of four red flashes followed by 10 seconds of steady red lighting.
After checking the main LED (red), press the [ENT] key.



SMU-00333

REMO LED CHECK

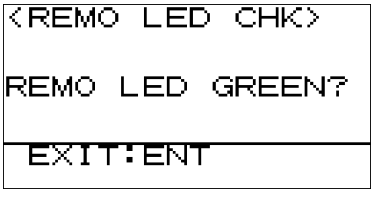
This item checks if the SIGNAL LED on the driving recorder remote box lights, or flashes green or red. This check confirms the operational status of the SIGNAL LED.
Use the [UP] and [DOWN] keys to select the desired item on the REMO LED CHECK screen, and then press the [ENT] key.
To return to the SELF CHECK screen, press the [MENU] key.



SMU-00334

1. LED GREEN CHECK

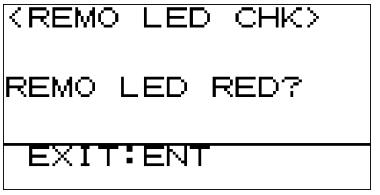
This item checks whether the SIGNAL LED repeats a pattern of four green flashes followed by 10 seconds of steady green lighting.
After checking the remote control LED (green), press the [ENT] key.



SMU-00335

2. LED RED CHECK

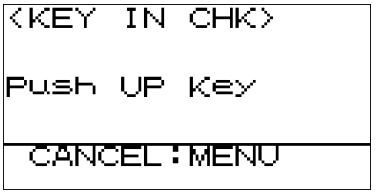
This item checks whether the SIGNAL LED repeats a pattern of four red flashes followed by 10 seconds of steady red lighting.
After checking the remote control LED (green), press the [ENT] key.



SMU-00336

KEY IN CHECK

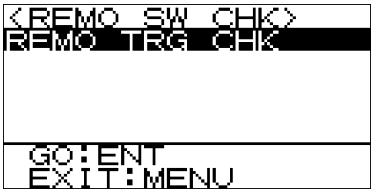
This item checks for operational defects in the SDI keypad keys. Key names appear on the display in the following sequence: UP → DOWN → RIGHT → LEFT → ENT → TRG → C → MENU. Press the directed key in order.
If pressing any key besides [MENU] does not switch to the next keypad key operation screen, press the [MENU] key to quit.



SMU-00337

REMOTE SW CHECK

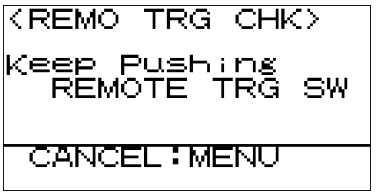
This item checks operation of the TRIGGER switch of the driving recorder remote box.
To check operation of the TRIGGER switch, press the [ENT] key.



SMU-00338

Operate the TRIGGER switch as instructed by the messages that appear on the display.
The check is complete when “CHECK OK!” appears on the display. Press the [ENT] key.

To return to the [SELF CHECK] screen, press the [MENU] key.



SMU-00339

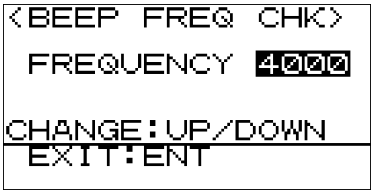
BEEP CHECK

This item checks the frequency and the volume of the SDI buzzer.
Use the [UP] and [DOWN] keys to select the desired item on the BEEP CHECK screen, and then press the [ENT] key.
To return to the SELF CHECK screen, press the [MENU] key.

SMU-00340

1. BEEP FREQ CHECK

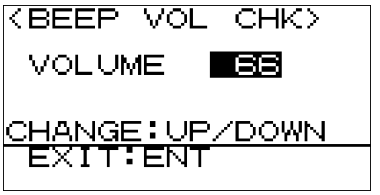
This item can be used to check buzzer operation and adjust its frequency.
Selecting it displays the current buzzer frequency setting.
Press the [UP] key to raise the buzzer frequency, or the [DOWN] key to lower the buzzer frequency.
After checking the buzzer frequency, press the [ENT] key.



SMU-00341

2. BEEP VOL CHECK

This item can be used to check buzzer operation and adjust its volume.
Selecting this item displays the current buzzer volume level.
Press the [UP] key to increase buzzer volume, or the [DOWN] key to decrease buzzer volume.
After checking the buzzer volume, press the [ENT] key.



SMU-00342

RAM CHECK

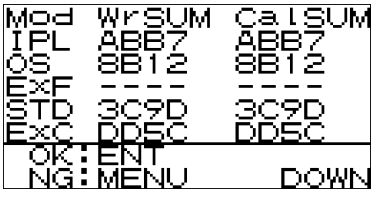
This item executes a SDI self-check of the SDI built-in RAM, and displays the result.
When completion of the self-diagnosis is indicated by “CHECK OK!” or “CHECK NG” on the display, press the [ENT] key.

SMU-00343

ROM CHECK

This item executes a SDI self-check of the SDI built-in ROM, and displays the result.
Check the display after the self-check is complete.
ROM is normal if the hexadecimal values that appear under “WrSUM” and “CalSUM” on the display are identical.
After checking the ROM check, press the [ENT] key.

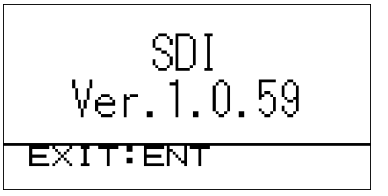
NOTE:
Use the [UP] and [DOWN] keys to scroll screen contents.



SMU-00344

VERSION CHECK

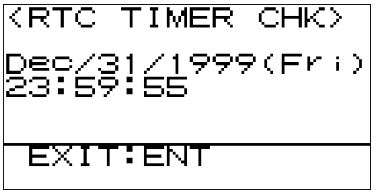
This item provides a means for checking the SDI software version.
Make sure that the version that appears during data communication is the same as the version shown on the version check screen.
After checking the version check, press the [ENT] key.



SMU-00523

RTC TIMER CHECK

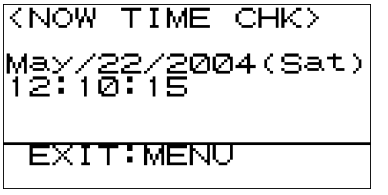
This item provides a means to check whether the date and time setting operation of the SDI built-in clock is normal.
Check to make sure that the year, month, day, day of the week, hour, minute, and second indicators in the figure below change to Jan/01/2000 (Sat) 00:00:00.
After checking the SDI built-in clock IC, press the [ENT] key.



SMU-00350

NOW TIME CHECK

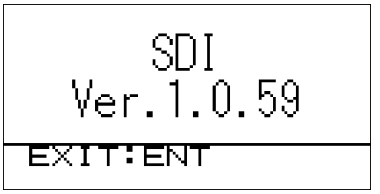
This item displays the current date and time setting of the SDI built-in clock.
To return to the SELF CHECK screen, press the [MENU] key.



SMU-00347

VERSION CHECK

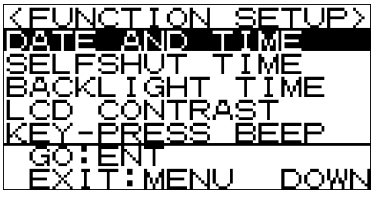
Selecting {VERSION CHECK} on the MENU screen causes the SDI software version screen to appear on the display.
To return to the system MENU screen, press the [ENT] key.



SMU-00523

FUNCTION SETUP (SDI Function Setup)

Selecting {FUNCTION SETUP} on the MENU screen causes the FUNCTION SETUP screen to appear on the display. Use the [UP] and [DOWN] keys to select the desired item, and then press the [ENT] key.
To return to the system MENU screen, press the [MENU] key.

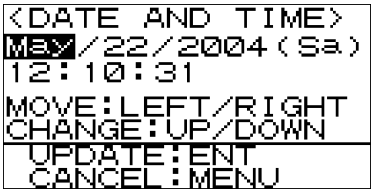


SMU-00351

DATE AND TIME

This item provides a means for configuring the date and time setting of the SDI built-in clock.
Use the [RIGHT] and [LEFT] keys to move to the desired setting, and then use the [UP] and [DOWN] keys to configure the setting as desired.
After configuring the settings, press the [ENT] key.
To cancel the setting procedure, press the [MENU] key.

NOTE:
The day of the week setting is configured automatically in accordance with the date that set.



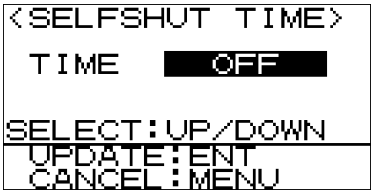
SMU-00352

SELFSHUT TIME

This item provides a means for configuring the SDI self-shutoff time setting.
While viewing the display screen “TIME” item, use the [UP] and [DOWN] keys to configure the setting.

NOTE:
Selecting OFF turns off the SDI self-shutoff feature. Note that turning off SDI self-shutoff runs the risk of running down the vehicle’s battery.

After configuring the settings, press the [ENT] key.
To cancel the setting procedure, press the [MENU] key.



SMU-00353

BACKLIGHT TIME

The LCD backlight turns off automatically if no operation of SDI keys is performed for a preset period. This setting specifies length of time of the preset period.
While viewing the display screen “TIME” item, use the [UP] and [DOWN] keys to configure the setting.

NOTE:
- Selecting OFF keeps the LCD backlight turned off.
- Selecting FOREVER keeps the LCD backlight turned on.

After configuring the settings, press the [ENT] key.
To cancel the setting procedure, press the [MENU] key.

SMU-00354

LCD CONTRAST

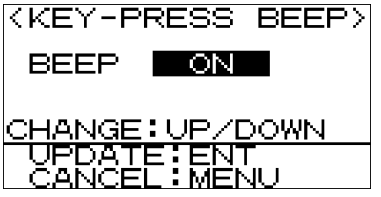
The contrast of the LCD can be adjusted to make its contents easier to view.
Pressing the [UP] key makes LCD contrast darker, while the [DOWN] key makes LCD contrast lighter.
After configuring the contrast setting, press the [ENT] key.
To cancel the setting procedure, press the [MENU] key.

NOTE:
You can check display contrast by pressing the [TRG] key on the keypad to turn off the LCD backlight. To turn the LCD backlight back on, press the [TRG] key again.

SMU-00355

KEY-PRESS BEEP

This setting turns the SDI key operation confirmation buzzer on and off.
While viewing the display screen “BEEP” item, use the [UP] and [DOWN] keys to configure buzzer ON/OFF setting.
After configuring the settings, press the [ENT] key.
To cancel the setting procedure, press the [MENU] key.



SMU-00356

List of Contents on Displayed Data

NOTE:
Items and contents of data displayed on the screen may differ from this list due to models, specifications and upgrading of the SUBARU select monitor III and/or vehicles.

Engine

No.	Items	Unit of measure	Contents	Remarks
1	Engine Load	%	Current air volume ratio if the fully opened air volume in the present engine speed is 100%.	
2	Coolant Temp.	°C °F	Value calculated from the output value of the engine coolant temperature sensor.	
3	A/F Correction #1	%	Main correction value for A/F feedback control (bank 1)	
4	A/F Learning #1	%	Main learning value for A/F feedback control (bank 1)	
5	A/F Correction #2	%	Main correction value for A/F feedback control (bank 2)	
6	A/F Learning #2	%	Main learning value for A/F feedback control (bank 2)	
7	Mani. Absolute Pressure	kPa mmHg inHg psig	Pressure value calculated from the manifold absolute pressure sensor (absolute value)	
8	Engine Speed	rpm	Calculated from the crankshaft position sensor signal.	
9	Vehicle Speed	km/h MPH	Value calculated from the output value of the vehicle speed sensor.	
10	Ignition Timing	deg	Ignition timing control value of the engine ECM.	
11	Intake Air Temp.	°C °F	Intake air temperature calculated from the output value of the intake air temperature sensor.	
12	Mass Air Flow	g/s lb/m	Mass air flow calculated from the output value of the air flow sensor.	
13	Throttle Opening Angle	%	Throttle opening angle calculated from the output value of the throttle position sensor.	
14	Front O2 Sensor #1	V	Output value of the front O2 sensor (bank 1). Input value to the engine ECM.	

No.	Items	Unit of measure	Contents	Remarks
15	Rear O2 Sensor	V	Output value to the rear O2 sensor. Input value to the engine ECM.	
16	Front O2 Sensor #2	V	Output value of the front O2 sensor (bank 2). Input value to the engine ECM.	
17	Battery Voltage	V	Battery voltage. Input value to the engine ECM.	
18	Air Flow Sensor Voltage	V	Output value of the air flow sensor. Input value to the engine ECM.	
19	Throttle Sensor Voltage	V	Output value of the throttle position sensor. Input value to the engine ECM.	
20	Diff. Press. Sen. Vol.	V	Output value of the pressure difference sensor detecting the difference between primary and secondary charging pressure.	This item is applied only to twin turbo model.
21	Fuel Injection #1 Pulse	ms	Control value for the fuel injection period from the engine ECM (bank 1).	
22	Fuel Injection #2 Pulse	ms	Control value for the fuel injection period from the engine ECM (bank 2).	
23	Knocking Correction	deg	Retard amount when knocking has occurred. Partial learned value of the learned ignition timing.	
24	Atmosphere Pressure	kPa mmHg inHg psig	Atmospheric pressure calculated from the output value of the atmospheric pressure sensor.	
25	Mani. Relative Pressure	kPa mmHg inHg psig	Value of manifold absolute pressure minus atmosphere pressure. [Manifold absolute pressure - Atmosphere pressure]	
26	Pressure Diff. Sensor	kPa mmHg inHg psig	Pressure difference calculated by subtracting the pressure difference between primary and secondary charging pressure from the detected output value of the pressure difference sensor. Differential pressure = (Secondary pressure) - (Primary pressure)	This item is applied only to twin turbo model.
27	Fuel Tank Pressure	kPa mmHg inHg psig	Pressure in the fuel tank. Pressure calculated from the output value of the fuel tank pressure sensor.	This item is applied only to North American models.

No.	Items	Unit of measure	Contents	Remarks
28	CO Adjustment	V	The front O2 sensor cannot be used in areas using leaded gasoline. As this causes open control, the correction value has been established to provide central control as far as possible for the initial air-fuel ratio. Adjustment can be made while confirming the CO value.	
29	Learned Ignition Timinig	deg	Advance or retard amount when knocking has occurred. (Learned ignition timing)	
30	Accel. Opening Angle	%	Accelerator pedal opening angle ratio calculated from the output value of the accelerator position sensor.	
31	Fuel Temp.	°C °F	Fuel temperature calculated from the output value of the fuel temperature sensor.	This item is applied only to North American models.
32	Front O2 Heater #1	A	Current value of the front O2 sensor heater. Control value of the engine ECM.	
33	Rear O2 Heater Current	A	Current value of the rear O2 sensor heater. Control value of the engine ECM.	
34	Front O2 Heater #2	A	Current value of the front O2 sensor heater. Control value of the engine ECM.	
35	Fuel Level	V	Output value of the fuel level sensor. Engine ECM input value. Total value of main and sub.	
36	Radiator Fan Control	%	Radiator fan control duty ratio. Control of the radiator fan control unit. Output value of the engine ECM.	This item is applied only to H6 model.
37	Primary Control	%	Primary charging pressure control signal. Control duty ratio of the charging pressure control solenoid valve. Output value of the engine ECM.	This item is applied only to turbo model.
38	Secondary Control	%	Secondary charging pressure control signal. Control duty ratio of the charging pressure control solenoid valve. Output value of the engine ECM.	This item is applied only to turbo model.
39	CPC Valve Duty Ratio	%	CPC valve control duty ratio. Output value of the engine ECM.	
40	TGV Position Sensor R	V	Output value of the TGV position sensor RH. Engine ECM input value.	

No.	Items	Unit of measure	Contents	Remarks
41	TGV Position Sensor L	V	Output value of the TGV position sensor LH. Engine ECM input value.	
42	ISC Valve Duty Ratio	%	ISC valve control duty ratio. Output value of the engine ECM.	
43	A/F Lean Correction	%	Sometimes the air-fuel ratio intentionally is controlled offset from the theoretical fuel-air ratio (lean burn control etc.). Correction value at this time.	
44	A/F Heater Duty	%	Front O2 sensor heater control duty ratio. Output value of the engine ECM.	
45	ISC Valve Step	STEP	ISC valve step number. Stepping motor step number. Output value of the engine ECM.	
46	No. of EGR steps	STEP	EGR valve step number. Stepping motor step number. Output value of the engine ECM.	
47	ALT Duty	%	Alternator control duty ratio. Output value of the engine ECM.	
48	Fuel Pump Duty	%	Fuel pump control duty ratio. The duty ratios for control are 0%, 33%, 66%, and 100%. Output value of the engine ECM.	
49	VVT Adv. Ang. Amount R	deg	Intake VVT advance amount (bank 1)	
50	VVT Adv. Ang. Amount L	deg	Intake VVT advance amount (bank 2)	
51	OCV Duty R	%	OCV control duty ratio (bank 1). Output value of the engine ECM.	
52	OCV Duty L	%	OCV control duty ratio (bank 2). Output value of the engine ECM.	
53	OCV Current R	mA	OCV actual current value (bank 1). Engine ECM input value.	
54	OCV Current L	mA	OCV actual current value (bank 2). Engine ECM input value.	
55	A/F Sensor #1 Current	mA	Output current value of the front A/F sensor (bank 1). Engine ECM input value.	
56	A/F Sensor #2 Current	mA	Output current value of the front A/F sensor (bank 2). Engine ECM input value.	

No.	Items	Unit of measure	Contents	Remarks
57	A/F Sensor #1 Resistance	ohm	Resistance value of the front A/F sensor calculated from the output value of the front A/F sensor (bank 1)	
58	A/F Sensor #2 Resistance	ohm	Resistance value of the front A/F sensor calculated from the output value of the front A/F sensor (bank 2)	
59	A/F Sensor #1	—	Actual lambda value calculated from the output value of the front A/F sensor (bank 1)	
60	A/F Sensor #2	—	Actual lambda value calculated from the output value of the front A/F sensor (bank 2)	
61	A/F Correction #3	%	Sub-correction value for the A/F feedback control.	
62	A/F Learning #3	%	Sub-learned value for the A/F feedback control.	
63	Rear O2 Heater Voltage	V	Voltage value of the rear O2 sensor heater. Output value of the engine ECM.	
64	A/F Adjust Voltage	V	Value for detecting a front A/F sensor variation. Engine ECM input value.	
65	Gear Position	st	Present gear position. Input value from the transmission ECM.	
66	A/F Heater Current 1	A	Current value of the front A/F sensor heater (bank 1). Engine ECM input value.	
67	A/F Heater Current 2	A	Current value of the front A/F sensor heater (bank 2). Engine ECM input value.	
68	SUBARU Intelligent Drive mode	I/S/S#	Indication of the present “SUBARU Intelligent Drive” setting.	
69	Throttle sensor closed V	V	Voltage value for the fully closed position of the main throttle position sensor. Fully closed position learning.	
70	Throttle Motor Duty	%	Throttle motor control duty ratio. Output value of the engine ECM.	
71	Throttle Motor Voltage	V	Throttle motor power supply voltage. Engine ECM input value.	

No.	Items	Unit of measure	Contents	Remarks
72	Sub-Throttle Sensor	V	Voltage value of the sub-throttle position sensor. Engine ECM input value.	
73	Main-Throttle Sensor	V	Voltage value of the main throttle position sensor. Engine ECM input value.	
74	Sub-Accelerator Sensor	V	Voltage value of the sub accelerator pedal position sensor. Engine ECM input value.	
75	Main-Accelerator Sensor	V	Voltage value of the main accelerator pedal position sensor. Engine ECM input value.	
76	Fuel Pressure	kPa	Fuel pressure. Control value of the engine ECM.	
77	Exhaust Gas Temperature	°C °F	Exhaust gas temperature calculated from the output value of the exhaust temperature sensor.	
78	Exhaust Gas Temp. 2	°C °F	Not used	
79	Sec. Air Piping Pressure	kPa mmHg inHg psig	Secondary air piping pressure. Engine ECM input value.	
80	Sec. Air Flow	g/s lb/m	Secondary mass air flow calculated from the secondary air piping pressure.	
81	Memorized Cruise Speed	km/h MPH	Target vehicle speed of the cruise control system (set vehicle speed).	
82	A/F Correction #4	%	Sub-correction value for A/F feedback control (bank 2).	
83	A/F Learning #4	%	Sub-learned value for A/F feedback control (bank 2).	
84	Fuel level resistance	ohm	Resistance value of the fuel level sensor. Engine ECM input value.	
85	Odometer	km	Estimated odometer	
86	Fuel tank air presser	MPa	Used for evaporative system diagnosis. Measuring of the pressure in the fuel tank.	This item is applied only to North American models.
87	Oil Temperature	°C °F	Oil temperature of the VVL system. Value calculated from the output value of the oil temperature sensor.	
88	OSV Duty R	%	OSV control duty ratio (bank 1). Output value of the engine ECM.	

No.	Items	Unit of measure	Contents	Remarks
89	OSV Duty L	%	OSV control duty ratio (bank 2). Output value of the engine ECM.	
90	OSV Current R	mA	OSV target current value (bank 1). Output value of the engine ECM.	
91	OSV Current L	mA	OSV target current value (bank 2). Output value of the engine ECM.	
92	Exh. VVT Retard Ang. R	deg	Exhaust VVT retard amount (bank 1).	
93	Exh. VVT Retard Ang. L	deg	Exhaust VVT retard amount (bank 2).	
94	Exh. OCV Duty R	%	Exhaust OCV control duty ratio (bank 1). Output value of the engine ECM.	
95	Exh. OCV Duty L	%	Exhaust OCV control duty ratio (bank 2). Output value of the engine ECM.	
96	Exh. OCV Current R	mA	Exhaust OCV current value (bank 1). Output value of the engine ECM.	
97	Exh. OCV Current L	mA	Exhaust OCV current value (bank 2). Output value of the engine ECM.	
98	VVL Lift Mode	—	Display of the VVL control mode.	
99	Roughness Monitor #1	—	Count value of roughness monitor #1.	
100	Roughness Monitor #2	—	Count value of roughness monitor #2.	
101	Roughness Monitor #3	—	Count value of roughness monitor #3.	
102	Roughness Monitor #4	—	Count value of roughness monitor #4.	
103	Roughness Monitor #5	—	Count value of roughness monitor #5.	
104	Roughness Monitor #6	—	Count value of roughness monitor #6.	
105	Learned IGN Time Correct	deg	Value of only the whole learning value in the ignition timing learning value.	
106	Main Injection Period	°CA	Controlled value of the main injection period by engine ECM.	This item is applied only to Diesel models.
107	Final Injection Amount	mm3/st	Total injection amount of multiple injections.	This item is applied only to Diesel models.

No.	Items	Unit of measure	Contents	Remarks
108	Number of Times Injected	—	Number of times injected which corresponds to running conditions. (this excludes “After-injection” and “Post-injection”)	This item is applied only to Diesel models.
109	Target Intake Manifold Pressure	kPa	Target intake manifold pressure of engine ECM.	This item is applied only to Diesel models.
110	Target Intake Air Amount	mg/cyl	Target intake air amount of engine ECM.	This item is applied only to Diesel models.
111	Mass Air Flow	mg/cyl	Intake air amount calculated from the output value of air flow sensor.	This item is applied only to Diesel models.
112	Target EGR Valve Opening Angle	%	Target EGR valve opening angle of engine ECM.	This item is applied only to Diesel models.
113	EGR Valve Opening Angle	%	EGR valve opening angle calculated from the output of EGR valve opening angle sensor.	This item is applied only to Diesel models.
114	EGR Duty	%	EGR valve control duty ratio. Output value of engine ECM.	This item is applied only to Diesel models.
115	Target Common Rail Pressure	MPa	Target common rail pressure of engine ECM.	This item is applied only to Diesel models.
116	Common rail pressure	MPa	Pressure within common rail calculated from the output value of common rail pressure sensor.	This item is applied only to Diesel models.
117	Intake Air Temperature	°C °F	Intake air temperature calculated from the output value of airflow and intake air temperature sensor.	This item is applied only to Diesel models.
118	Target engine speed	rpm	Target engine speed of engine ECM.	This item is applied only to Diesel models.
119	Boost Pressure Feedback	%	Opening angle corrected in response to feedback from boost control valve.	This item is applied only to Diesel models.
120	Electric Power Steering Current Value	A	Current value of electric power steering. Input value from power steering ECM to engine ECM.	This item is applied only to Diesel models.
121	Target Fuel Pump Current	mA	Target current value of suction control valve. Value calculated by engine ECM.	This item is applied only to Diesel models.
122	Actual Fuel Pump Current	mA	Actual current value of suction control valve. Input value to engine ECM.	This item is applied only to Diesel models.
123	Mileage after Injector Learning	km mile	Mileage after performing injection amount learning for fuel injector.	This item is applied only to Diesel models.

No.	Items	Unit of measure	Contents	Remarks
124	Mileage after Injector Learning	km mile	Mileage after replacing fuel injectors and performing injection amount learning with SSMIII for the new injector.	This item is applied only to Diesel models.
125	Interior heater	Step	Number of active PTC heaters 0 = all heaters OFF, 1 = 1 heater ON, 2 = 2 heaters ON	This item is applied only to Diesel models.
126	Cylinder #1 quantity correction value	ms	Amount of injection corrected for cylinder #1 to stabilize idling.	This item is applied only to Diesel models.
127	Cylinder #2 quantity correction value	ms	Amount of injection corrected for cylinder #2 to stabilize idling.	This item is applied only to Diesel models.
128	Cylinder #3 quantity correction value	ms	Amount of injection corrected for cylinder #3 to stabilize idling.	This item is applied only to Diesel models.
129	Cylinder #4 quantity correction value	ms	Amount of injection corrected for cylinder #4 to stabilize idling.	This item is applied only to Diesel models.
130	AT Vehicle ID Signal	ON/OFF	Signal for identification of the transmission type (AT or MT). “ON” at the time of AT.	
131	Test Mode Signal	ON/OFF	Display of the connection status of the test mode connector. “ON” at the time of connection.	
132	Read Memory Signal	ON/OFF	Display of the connection status of the read memory connector. “ON” when connected.	
133	D-check Require Flag	ON/OFF	Turns into ON if it is requested to operate solenoid compulsory drive and compulsory adjustment function for engine speed and A/F.	
134	Delivery Mode Connector (Test Mode Connector)	ON/OFF	Display of the connection status of the delivery mode connector (test mode connector). ON with connected status. Engine ECM input value.	
135	Clear Memory Terminal	ON/OFF	Display of the connection status of the clear memory connector. “ON” with connected status. Engine ECM input value.	
136	Neutral Position Switch	ON/OFF	Neutral position switch signal. Becomes ON when MT is in neutral or when AT is in “P” range or “N” range. Engine ECM input value.	
137	Idle Switch Signal	ON/OFF	Idling signal. Becomes ON at the time of idling.	

No.	Items	Unit of measure	Contents	Remarks
138	Int'cool auto washer SW	ON/OFF	Intercooler water spray auto switch signal. Becomes ON when the auto switch is ON. Engine ECM input value.	
139	Ignition Switch	ON/OFF	Ignition switch signal. Becomes ON when the ignition switch is ON.	
140	P/S Switch	ON/OFF	Power steering switch signal. Becomes ON at the time of steering operation. Engine ECM input value.	
141	A/C Switch	ON/OFF	A/C switch signal. Becomes ON when the A/C switch on the heater control is ON. Engine ECM input value.	
142	Handle Switch	Low Input/High Input	Steering wheel switch signal. As the accelerator pedal stroke is different left and right in case of ETC, this has been provided so that the engine ECM can identify whether the steering wheel is on the left or the right. “Low Input” in case of RH drive.	
143	Starter Switch	ON/OFF	Starter switch signal. Becomes ON when the starter is ON. Engine ECM input value.	
144	Front O2 #1 Rich Signal	ON/OFF	Front O2 sensor output monitor (bank 1). Becomes ON at the time of rich.	
145	Rear O2 Rich Signal	ON/OFF	Rear O2 sensor output monitor. Becomes ON at the time of rich.	
146	Front O2 #2 Rich Signal	ON/OFF	Front O2 sensor output monitor (bank 2). Becomes ON at the time of rich.	
147	Knocking Signal	ON/OFF	Judgment of knocking occurrence from the knocking sensor output signal. “ON” at the time of knocking occurrence.	
148	Knocking #2 Signal	ON/OFF	Judgment of knocking occurrence from the knocking sensor output signal. “ON” at the time of knocking occurrence. (bank 2)	
149	Electric Load Signal	ON/OFF	Electric load signal. “ON” when there was an electric load. Engine ECM input value.	
150	Crankshaft Position Sig.	ON/OFF	Output signal of the crankshaft position sensor. Turns into “ON” while the engine is running. Engine ECM input signal.	

No.	Items	Unit of measure	Contents	Remarks
151	Camshaft Position Sig.	ON/OFF	Output signal of the camshaft position sensor. Turns into “ON” while the engine is running. Engine ECM input signal.	
152	Rear Defogger SW	ON/OFF	Rear defogger switch input signal. Becomes ON when the switch is ON. Engine ECM input value.	
153	Blower Fan SW	ON/OFF	Blower fan switch input signal. Becomes ON when the switch is ON. Engine ECM input value.	
154	Light Switch	ON/OFF	Light switch input signal. Becomes ON when the switch is ON. Engine ECM input value.	
155	Wiper Switch	ON/OFF	Wiper switch input signal. Becomes ON when the switch is ON. Engine ECM input value.	
156	A/C Lock Signal	ON/OFF	A/C compressor lock fault signal. Becomes ON in case of a compressor lock fault. Engine ECM input value.	
157	A/C Mid Pressure Switch	ON/OFF	A/C mid-pressure switch signal. Becomes ON when the switch is ON. Engine ECM input value.	
158	A/C Compressor Signal	ON/OFF	A/C compressor drive signal. Becomes ON at the time of drive signal output. Output value of the engine ECM.	
159	Radiator Fan Relay #3	ON/OFF	Not used	
160	Radiator Fan Relay #1	ON/OFF	Radiator fan relay drive signal. Becomes ON at the time of drive signal output. Output value of the engine ECM.	
161	Radiator Fan Relay #2	ON/OFF	Radiator fan relay drive signal. Becomes ON at the time of drive signal output. Output value of the engine ECM.	
162	Fuel Pump Relay	ON/OFF	Fuel pump relay drive signal. Becomes ON at the time of drive signal output. Output value of the engine ECM.	
163	Int'cool auto washer relay	ON/OFF	Intercooler water spray relay drive signal. Becomes ON at the time of drive signal output. Output value of the engine ECM.	

No.	Items	Unit of measure	Contents	Remarks
164	CPC Solenoid Valve	ON/OFF	Purge control solenoid valve drive signal. Becomes ON at the time of drive signal output. Output value of the engine ECM.	
165	Blow-by leak Connector	ON/OFF	Detection of disconnection of blow-by hoses.	This item is applied only to turbo model for North America.
166	PCV Solenoid Valve	ON/OFF	Pressure control solenoid valve drive signal. Becomes ON at the time of drive signal output. Output value of the engine ECM.	This item is applied only to North American models.
167	TGV Output	ON/OFF	Drive signal to the TGV motor. Becomes ON at the time of TGV operation (When duty output is above 0%). Output value of the engine ECM.	
168	TGV Drive	Open/Close	Display of the TGV drive status. Becomes “Open” at the time of TGV open status. Engine ECM control status.	
169	Variable Intake Air Sol.	ON/OFF	Drive signal to the variable intake air solenoid. Becomes ON at the time of drive signal output. Output value of the engine ECM.	
170	Pressure Sources Change	ON/OFF	Solenoid used for atmosphere pressure detection with the absolute pressure sensor. When ON, the absolute pressure sensor detects atmosphere pressure.	
171	Vent. Solenoid Valve	ON/OFF	Drive signal to the drain valve. Becomes ON at the time of valve drive. Output value of the engine ECM.	This item is applied only to North American models. Atmosphere open when the valve is OFF.
172	P/S Solenoid Valve	ON/OFF	Drive signal to the solenoid used when the intake air mass is increased at the time of power steering ON. Intake air mass increase when power steering is ON.	
173	Assist Air Sol. Valve	ON/OFF	Drive signal to the air assist injector solenoid valve. Becomes ON at the time of valve drive. Output value of the engine ECM.	This item is applied only to North American models.
174	Tank Sensor Cntl Valve	ON/OFF	Drive signal to the tank sensor control valve. Becomes ON at the time of solenoid valve drive. Output value of the engine ECM.	

No.	Items	Unit of measure	Contents	Remarks
175	Relief Valve Solenoid 1	ON/OFF	Drive signal to the relief valve solenoid valve 1 for twin turbocharger system control. Becomes ON at the time of solenoid valve drive. Output value of the engine ECM.	This item is applied only to twin turbo model.
176	Relief Valve Solenoid 2	ON/OFF	Drive signal to the relief valve solenoid valve 2 for twin turbocharger system control. Becomes ON at the time of solenoid valve drive. Output value of the engine ECM.	This item is applied only to twin turbo model.
177	TCS Relief Valve Sol.	ON/OFF	Drive signal to the charging pressure solenoid valve at the time of VDC operation. Becomes ON at the time of solenoid valve drive. Output value of the engine ECM.	
178	Ex. Gas Pos. Pressure	ON/OFF	Drive signal to the exhaust gas positive pressure valve for twin turbocharger system control. Becomes ON at the time of solenoid valve drive. Output value of the engine ECM.	This item is applied only to twin turbo model.
179	Ex. Gas Neg. Pressure	ON/OFF	Drive signal to the exhaust gas negative pressure valve for twin turbocharger system control. Becomes ON at the time of solenoid valve drive. Output value of the engine ECM.	This item is applied only to twin turbo model.
180	Intake Air Solenoid	ON/OFF	Drive signal to the intake air solenoid valve for twin turbocharger system control. Becomes ON at the time of solenoid valve drive. Output value of the engine ECM.	This item is applied only to twin turbo model.
181	Muffler control	ON/OFF	Signal for variable muffler control. Becomes ON at the time of muffler open mode. Output value of the engine ECM.	
182	Exhaust By-pass valve	ON/OFF	Not used	
183	Eng. Oil Press. SW 1	ON/OFF	Drive signal to the VVL oil pressure switch RH for diagnosis. Becomes ON when the pressure switch is ON. Output value of the engine ECM.	
184	Eng. Oil Press. SW 2	ON/OFF	Drive signal to the VVL oil pressure switch LH for diagnosis. Becomes ON when the pressure switch is ON. Output value of the engine ECM.	

No.	Items	Unit of measure	Contents	Remarks
185	CPC Solenoid 2	ON/OFF	Purge control solenoid valve 2 drive signal. Becomes ON at the time of drive signal output. Output value of the engine ECM.	
186	Retard Signal from AT	ON/OFF	Signal requesting the retard transmitted from the transmission ECM. Becomes ON when the request signal has been transmitted. Engine ECM input value.	
187	Fuel Cut signal from AT	ON/OFF	Signal requesting fuel cut transmitted from the transmission ECM. Becomes ON when the request signal has been transmitted. Engine ECM input value.	
188	Ban of Torque Down	ON/OFF	Signal notifying torque-down prohibition in regard to the VDC ECM. Becomes ON at the time of prohibition signal output. Output value of the engine ECM.	
189	Request Torque Down VDC	ON/OFF	Signal requesting torque-down transmitted from the VDC ECM. Becomes ON when the request signal has been transmitted. Engine ECM input value.	
190	Torque Control Signal #1	ON/OFF	Ignition timing retard and fuel cut control is performed by combination of #1 and #2, and torque-down is executed	
191	Torque Control Signal #2	ON/OFF	Same as # 1	
192	Torque Permission Signal	ON/OFF	Signal notifying torque-down permission in regard to the transmission ECM. Becomes ON at the time of allowance signal output. Output value of the engine ECM.	
193	EAM Signal	Low/High	Signal notifying torque-down permission in regard to the transmission control system ECM. Becomes “Low” at the time of prohibition signal output. Output value of the engine ECM.	
194	AT coop. Lock up sig.	ON/OFF	Display of the AT lock-up status. Becomes ON with lock-up status.	
195	AT coop. Lean burn sig.	ON/OFF	Becomes ON at the time of lean burn control execution for a lean burn model. Output value of the engine ECM.	

No.	Items	Unit of measure	Contents	Remarks
196	AT coop. Rich spike sig.	ON/OFF	Becomes ON at the time of rich spike output for a lean burn model. Output value of the engine ECM.	
197	AET Signal	Low/High	Torque-down request signal from the transmission ECM. Becomes “Low” at the time of request signal input.	
198	Kick Down Switch	ON/OFF	Input value from the kick-down switch. At present, these data are not used.	
199	Economy Switch	ON/OFF	Input value from the economy switch. Becomes ON when the economy switch is ON. (However, CAN input)	This item is applied only to Japanese models.
200	Idle Switch	ON/OFF	Idling signal. ON at the time of idling.	
201	ETC Motor Relay	ON/OFF	Drive signal to the ETC motor relay. Becomes ON at the time of drive signal output. Output value of the engine ECM.	
202	Injector Driver Relay	ON/OFF	Drive signal to the injector driver relay. Becomes ON at the time of drive signal output. Output value of the engine ECM.	This item is applied only to CNG model.
203	Clutch Switch	ON/OFF	Clutch switch signal. Becomes ON when the clutch pedal is depressed. Engine ECM input value.	
204	Stop Light Switch	ON/OFF	Stop light switch signal. Becomes ON when the stop light lights. Engine ECM input value.	
205	SET/COAST Switch	ON/OFF	SET/COAST switch signal of the cruise control system. Becomes ON at the time of switch operation. Engine ECM input value.	
206	RESUME/ACCEL Switch	ON/OFF	RESUME/ACCEL switch signal of the cruise control system. Becomes ON at the time of switch operation. Engine ECM input value.	
207	Brake Switch	ON/OFF	Brake switch signal. Becomes ON when the brake pedal is depressed. Engine ECM input value.	
208	Inhibitor Switch	ON/OFF	Inhibitor switch signal. Becomes ON at the time of “P” range or “N” range. Engine ECM input value.	

No.	Items	Unit of measure	Contents	Remarks
209	Main Switch	ON/OFF	Main switch signal of the cruise control system. Becomes ON at the time of switch operation. Engine ECM input value.	
210	Body Int. Unit Data	OFF/ON	Status of CAN data reception from the body integrated unit. Display whether received any data.	
211	Body Int. Unit Count	OFF/ON	Update status for the CAN data from the body integrated unit. Display whether the counters being transmitted are updated sequentially or not.	
212	Sec. Air Combi V Relay 2	ON/OFF	Secondary air combination valve relay 2 drive signal. Becomes ON at the time of drive signal output. Output value of the engine ECM.	
213	Sec. Air Pump Relay	ON/OFF	Secondary air pump relay drive signal. Becomes ON at the time of drive signal output. Output value of the engine ECM.	
214	Sec. Air Combi V Relay 1	ON/OFF	Secondary air combination valve relay 1 drive signal. Becomes ON at the time of drive signal output. Output value of the engine ECM.	
215	distance change SW	ON/OFF	Display of the ON/OFF status of the vehicle distance setting switch used by the ADA cruise control.	This item is applied only to Japanese models.
216	CC Cancel SW	ON/OFF	Signal of the cruise control cancel switch of the cruise control system. Becomes ON at the time of switch operation. Engine ECM input value.	
217	MIL On Flag	ON/OFF	Lighting indication of the malfunction indicator light.	
218	Boost Pressure Control Mode	Feedback/Open	Mode to control boost pressure. Turn to “Feedback” during feedback control.	This item is applied only to Diesel models.
219	EGR Control Mode	Feedback/Open	Mode to control EGR. Turn to “Feedback” during feedback control.	This item is applied only to Diesel models.
220	Glow Relay	ON/OFF	Operating signal of glow relay. It becomes ON when glow relay is in operation. Output value of engine ECM.	This item is applied only to Diesel models.
221	Sub Fuel Pump Relay	ON/OFF	Operating signal of sub fuel pump. It becomes ON when sub fuel pump is in operation. Output value of engine ECM.	This item is applied only to Diesel models.

No.	Items	Unit of measure	Contents	Remarks
222	Fuel Pump Learning	incomplete/completed	Process of fuel pump leaning	This item is applied only to Diesel models.
223	Injector Learning	incomplete/completed	Process of injection amount learning for fuel injector.	This item is applied only to Diesel models.
224	EGR Learning	incomplete/completed	Process of EGR learning.	This item is applied only to Diesel models.
225	Fuel Cut Request	With Request/ Without Reqest	Fuel cut request calculated by engine ECM.	This item is applied only to Diesel models.
226	Fuel Pump Mode	Feedback/Open	Mode to control fuel pump. Turn to “Feedback” during feedback control.	This item is applied only to Diesel models.
227	Clutch Switch for Smart	ON/OFF	Clutch switch for starting vehicles equipped with Keyless Access with Push Button Start. It becomes ON once clutch pedal is depressed. Input value to engine ECM.	

Transmission

No.	Items	Unit of measure	Contents	Remarks
1	Engine Speed	rpm	Engine speed signal transmitted from the engine ECM. Calculated from the crankshaft position sensor signal. Transmission ECM input value.	
2	Battery Voltage	V	Battery voltage. Transmission ECM input value.	
3	Air Flow Sensor Voltage	V	Mass air flow sensor output value transmitted from the engine ECM. Transmission ECM input value.	
4	Throttle Sensor Voltage	V	Output value of the throttle position sensor. Transmission ECM input value.	
5	Accel. Opening Angle	%	Accelerator pedal opening angle ratio transmitted from the engine ECM. Value calculated from the accelerator pedal position sensor. Transmission ECM input value.	
6	Front Wheel Speed	km/h MPH	Front wheel speed calculated from the front vehicle speed sensor.	
7	ATF Temp.	°C °F	Value calculated from the ATF temperature sensor. ATF temperature of the oil pan part.	

No.	Items	Unit of measure	Contents	Remarks
8	Gear Position	st	Current gear position. Indication of the gear position before shifting at the time of shifting and the current gear position when not shifting.	
9	Line Pressure Duty Ratio	%	Line pressure solenoid control duty ratio. Transmission ECM output value.	
10	Lock Up Duty Ratio	%	Lock-up duty solenoid control duty ratio. Transmission ECM output value.	
11	Transfer Duty Ratio	%	Transfer duty solenoid control duty ratio. Transmission ECM output value.	
12	Throttle Sensor Power	V	Throttle position sensor power supply voltage. Transmission ECM output value.	
13	Turbine Revolution Speed	rpm	In case of 4AT: Input shaft speed calculated from the torque converter turbine speed sensor signal. In case of 5AT: Input shaft speed calculated from the signals of torque converter turbine speed sensor 1 and torque converter turbine speed sensor 2.	
14	Brake Clutch Duty Ratio	%	2-4 Brake duty solenoid control duty ratio. Transmission ECM output value.	
15	Rear Wheel Speed	km/h MPH	Rear wheel speed calculated from the rear vehicle speed sensor.	
16	Mani.Pressure Voltage	V	Manifold absolute pressure sensor output value transmitted from the engine ECM. Transmission ECM input value.	
17	Lateral G Sensor	V	Output value of lateral G sensor or yaw rate & lateral G sensor. Transmission ECM input value.	
18	Low Clutch Duty	%	Low clutch duty solenoid control duty ratio. Transmission ECM output value.	
19	High Clutch Duty	%	High clutch duty solenoid control duty ratio. Transmission ECM output value.	
20	L&R B Duty	%	Low & reverse duty solenoid control duty ratio. Transmission ECM output value.	

No.	Items	Unit of measure	Contents	Remarks
21	ATF Temperature 2	°C °F	Value calculated from the ATF temperature sensor 2 output. ATF temperature at the torque converter outlet.	
22	Voltage C-diff. SW	V	Output value of the DCCD volume. The output value changes according to the dial position. DCCD ECM input value.	This item is applied only to vehicle equipped with DCCD.
23	AT Turbine Speed 1	rpm	Value calculated from the signal of torque converter turbine speed sensor 1. Indication of the front sun gear speed.	
24	AT Turbine Speed 2	rpm	Value calculated from the signal of torque converter turbine speed sensor 2. Indication of the front planetary carrier speed.	
25	C-Diff. Real Current	A	Actual current value of the transfer coil performing LSD torque control. DCCD ECM output value.	This item is applied only to vehicle equipped with DCCD.
26	C-Diff. Indicate Current	A	Indicated current value of the transfer coil performing LSD torque control, alculated by the DCCD ECM.	This item is applied only to vehicle equipped with DCCD.
27	SUBARU Intelligent Drive Mode	I / S/ S#	Indication of the present "SUBARU Intelligent Drive" setting.	
28	Sub-Accelerator Sensor	V	Sub accelerator pedal position sensor output value transmitted from the engine ECM. Transmission ECM input value.	
29	H&LR/C Solenoid Current	A	High & low reverse clutch solenoid actual current value. Transmission ECM output value.	
30	D/C Solenoid Current	A	Direct clutch solenoid actual current value. Transmission ECM output value.	
31	F/B Solenoid Current	A	Front brake solenoid actual current value. Transmission ECM output value.	
32	I/C Solenoid Current	A	Input clutch solenoid actual current value. Transmission ECM output value.	
33	P/L Solenoid Current	A	Line pressure solenoid actual current value. Transmission ECM output value.	
34	L/U Solenoid Current	A	Lock-up solenoid actual current value. Transmission ECM output value.	

No.	Items	Unit of measure	Contents	Remarks
35	AWD Sol. Current	A	Transfer solenoid actual current value. Transmission ECM output value.	
36	Yaw rate sensor voltage	V	Yaw rate sensor voltage value put out from the yaw rate & lateral G sensor. Transmission ECM input value.	
37	H&LR/C Solenoid Pressure	kPa	Target oil pressure calculated by the transmission ECM for control of high & low reverse clutch pressure. This value decides the indicator current value.	
38	D/C Solenoid Pressure	kPa	Target oil pressure calculated by the transmission ECM for control of the direct clutch pressure. This value decides the indicator current value.	
39	F/B Solenoid Pressure	kPa	Target oil pressure calculated by the transmission ECM for control of the front brake pressure. This value decides the indicator current value.	
40	I/C Solenoid Pressure	kPa	Target oil pressure calculated by the transmission ECM for control of the input clutch pressure. This value decides the indicator current value.	
41	P/L Solenoid Pressure	kPa	Target oil pressure calculated by the transmission ECM for control of the line pressure. This value decides the indicator current value.	
42	L/U Solenoid Pressure	kPa	Target oil pressure calculated by the transmission ECM for control of the lock-up clutch pressure. This value decides the indicator current value.	
43	AWD Solenoid Pressure	kPa	Target oil pressure calculated by the transmission ECM for control of the transfer clutch pressure. This value decides the indicator current value.	
44	Yaw rate & G sensor ref. V	V	Yaw rate sensor reference voltage value put out from the yaw rate & lateral G sensor. At the time of battery voltage fluctuations, the yaw rate sensor uses this value for correction of the output value. DCCD ECM input value.	This item is applied only to vehicle equipped with DCCD.
45	FR Wheel Speed	km/h MPH	Value calculated from the front ABS wheel speed sensor RH signal transmitted from VDC or ABS ECM. Transmission ECM input value.	

No.	Items	Unit of measure	Contents	Remarks
46	FL Wheel Speed	km/h MPH	Value calculated from the front ABS wheel speed sensor LH signal transmitted from VDC or ABS ECM. Transmission ECM input value.	
47	RR Wheel Speed	km/h MPH	Value calculated from the rear ABS wheel speed sensor RH signal transmitted from VDC or ABS ECM. Transmission ECM input value.	
48	RL Wheel Speed	km/h MPH	Value calculated from the rear ABS wheel speed sensor LH signal transmitted from VDC or ABS ECM. Transmission ECM input value.	
49	Steering Angle Sensor	deg	Steering angle of the steering wheel transmitted from the steering angle sensor. DCCD ECM input value.	This item is applied only to vehicle equipped with DCCD.
50	Fwd/B solenoid current	A	Actual current value of the forward brake solenoid. Transmission ECM output value.	
51	Fwd/B solenoid pressure	kPa	Target oil pressure calculated by the transmission ECM for control of the forward brake pressure. This value decides the indicator current value.	
52	Yaw Rate	deg/s	Yaw rate of the vehicle body calculated from the output of the yaw rate & lateral G sensor. DCCD ECM output value.	This item is applied only to vehicle equipped with DCCD.
53	Lateral G	m/s^2	Lateral Acceleration of the vehicle body calculated from the output of the yaw rate & lateral G sensor. DCCD ECM output value.	This item is applied only to vehicle equipped with DCCD.
54	DCCD Torque Distribution	0-6	Display of the initial LSD torque set value at the time of DCCD manual mode. At the time of auto mode: 0,Initial LSD torque "FREE" = 1,Initial LSD torque "Very small" = 2,Initial LSD torque "Small" = 3,Initial LSD torque "Medium" = 4,Initial LSD torque "Large" = 5,Initial LSD torque "LOCK" = 6	This item is applied only to vehicle equipped with DCCD.
55	DCCD Mode	0-3	Display of the mode setting status at the time of DCCD auto mode.	This item is applied only to vehicle equipped with DCCD.
56	Neutral Position Switch	ON/OFF	“ON” is indicated in case of N range or P range, and “OFF” is indicated for other ranges.	

No.	Items	Unit of measure	Contents	Remarks
57	Ignition Switch	ON/OFF	Ignition switch signal. Becomes ON when the ignition switch is ON.	
58	Tiptronic Mode Switch	ON/OFF	Manual mode switch signal. Becomes ON when the select lever is moved into the manual ga te. Transmission ECM input value.	
59	Cruise Control Signal	ON/OFF	Cruise control operation signal. Becomes ON when driving with cruise control.	
60	ABS Signal	ON/OFF	ABS operation signal. Becomes ON at the time of ABS operation.	
61	Down Switch	ON/OFF	Down switch signal. Becomes ON when the select lever is moved to the “- (minus)” side of the manual gate. Transmission ECM input value.	
62	Stop Light Switch	ON/OFF	Stop light switch signal. Becomes ON when the brake pedal is depressed. Transmission ECM input value.	
63	Up Switch	ON/OFF	Up switch signal. Becomes ON when the select lever is moved to the “+ (plus)” side of the manual gate. Transmission ECM input value.	
64	Kick Down Switch	ON/OFF	Kickdown judgment signal transmitted from the engine ECM. Becomes ON when kickdown is judged from change of the accelerator opening angle. Transmission ECM input value.	
65	FWD Switch	ON/OFF	FWD switch signal. Becomes ON when a fuse is inserted into the FWD fuse holder. Transmission ECM input value.	
66	Power Mode Switch	ON/OFF	Power mode switch signal. Becomes ON when the switch is ON. Transmission ECM input value.	
67	Hold Mode Switch	ON/OFF	Snow hold mode switch signal. Becomes ON when the switch is ON. Transmission ECM input value.	
68	1st Range Signal	ON/OFF	Inhibitor switch signal. Becomes ON when the select lever is in range 1. Transmission ECM input value.	
69	2nd Range Signal	ON/OFF	Inhibitor switch signal. Becomes ON when the select lever is in range 2. Transmission ECM input value.	

No.	Items	Unit of measure	Contents	Remarks
70	3rd Range Signal	ON/OFF	Inhibitor switch signal. Becomes ON when the select lever is in range 3. Transmission ECM input value.	
71	D Range Signal	ON/OFF	Inhibitor switch signal. Becomes ON when the select lever is in range D. Transmission ECM input value.	
72	R Range Signal	ON/OFF	Inhibitor switch signal. Becomes ON when the select lever is in range R. Transmission ECM input value.	
73	N/P Range Signal	ON/OFF	Inhibitor switch signal. Becomes ON when the select lever is in range N or P. Transmission ECM input value.	
74	4th Range Signal	ON/OFF	Inhibitor switch signal. Becomes ON when the select lever is in range 4. Transmission ECM input value.	
75	Tiptronic Solenoid	ON/OFF	Sport shift solenoid drive signal. Becomes ON at the time of manual mode gear 1. Engine brake is applied when ON. Transmission ECM output value.	
76	Torque Control Signal 1	ON/OFF	Torque-down request signal transmitted to the engine ECM. The engine ECM performs ignition timing retard and fuel cut control by combination of #1 and #2 and executes torque-down. Transmission ECM output value.	
77	Torque Control Signal 2	ON/OFF	Same as “Torque Control Signal 1”	
78	2-4 Brake Timing Sol.	ON/OFF	2-4 Brake timing solenoid drive signal. Becomes “ON” at the time of drive signal output. Transmission ECM output value.	
79	Low Clutch Timing Sol.	ON/OFF	Low clutch timing solenoid drive signal. Becomes “ON” at the time of drive signal output. Transmission ECM output value.	
80	Shift Solenoid #2	ON/OFF	Shift solenoid 2 drive signal. Becomes “ON” at the time of drive signal output. Transmission ECM output value.	
81	Shift Solenoid #1	ON/OFF	Shift solenoid 1 drive signal. Becomes “ON” at the time of drive signal output. Transmission ECM output value.	

No.	Items	Unit of measure	Contents	Remarks
82	Shift Output 4	ON/OFF	Signal for the sport shift indicator light. Becomes ON in manual mode when shift-up or shift-down is possible. Transmission ECM output value.	
83	Shift Output 3	ON/OFF	Signal for the sport shift indicator light. Becomes ON at the time of manual mode when the gear position is gear 4. Transmission ECM output value.	
84	Shift Output 2	ON/OFF	Signal for the sport shift indicator light. Becomes ON at the time of manual mode when the gear position is gear 2 or gear 3. Transmission ECM output value.	
85	Shift Output 1	ON/OFF	Signal for the sport shift indicator light. Becomes ON at the time of manual mode when the gear position is gear 1 or gear 3. Transmission ECM output value.	
86	Diagnosis Lamp	ON/OFF	AT warning light lighting signal. Becomes ON when the warning light lights. Transmission ECM output value.	
87	RR Diff. Oil Temp SW	ON/OFF	Rear differential temperature switch signal. Becomes OFF when the temperature rises and the contact becomes OFF. Normally ON. DCCD ECM input value.	This item is applied only to vehicle equipped with DCCD.
88	ATF Temperature Lamp	ON/OFF	AT temperature warning light lighting signal. Becomes ON when the warning light lights.	
89	Shift Lock Solenoid	ON/OFF	Shift lock solenoid drive signal put out from the transmission ECM or BIU. Becomes ON at the time of shift lock release.	
90	Economy Switch	ON/OFF	Economy switch signal. Becomes ON when the economy switch is switched ON. Transmission ECM input value.	
91	Power Mode Lamp	ON/OFF	Power indicator light lighting signal. Becomes ON when the power mode switch is ON. Transmission ECM input value.	
92	P Range	ON/OFF	Becomes ON when the select lever is in range P. Transmission ECM input value.	

No.	Items	Unit of measure	Contents	Remarks
93	Torque Control Cut Sig.	ON/OFF	Signal transmitted from the engine ECM prohibits torque reduction. Becomes ON when the prohibition signal is received. Transmission ECM input value.	
94	P/N Signal	ON/OFF	Starter motor drive permission signal to the engine ECM. Becomes ON when the select lever is in range N or P. Transmission ECM output value.	
95	TCS Switch	ON/OFF	TCS switch signal. Becomes ON when the TCS switch is ON. Transmission ECM output value.	
96	Hold Lamp	ON/OFF	Snow hold indicator light lighting signal. Becomes ON when the snow hold switch is ON. Transmission ECM input value.	
97	N Range	ON/OFF	Becomes ON when the select lever is in range N. Transmission ECM input value.	
98	Judgement of AWD	ON/OFF	Signal for drive type identification. Becomes ON for a vehicle with AWD. Transmission ECM output value.	
99	Inhibitor SW 1	HIGH/LOW	Inhibitor switch signal. The transmission ECM judges the current range position from the combination of #1, 2, 3, and 4. Transmission ECM input value.	
100	Inhibitor SW 2	HIGH/LOW	Same as “Inhibitor SW1”	
101	Inhibitor SW 3	HIGH/LOW	Same as “Inhibitor SW1”	
102	Inhibitor SW 4	HIGH/LOW	Same as “Inhibitor SW1”	
103	Inhibitor SW 3 Monitor	HIGH/LOW	Open circuit diagnostic signal for the inhibitor switch 3 input circuit. Transmission ECM input value.	
104	Back Lamp Relay	ON/OFF	Back-up light relay drive signal. Becomes ON at the time of drive signal output. Transmission ECM output value.	
105	AT Power Relay	ON/OFF	PV ignition relay drive signal. Becomes ON with reverse connection of the battery terminals. Relay for ECM protection. Transmission ECM output value.	

No.	Items	Unit of measure	Contents	Remarks
106	H&LR/C Fluid Pressure	ON/OFF	High & low reverse clutch oil pressure switch signal. Becomes ON when the contact point is ON because of the oil pressure. Transmission ECM input value.	
107	D/C Fluid Pressure	ON/OFF	Direct clutch oil pressure switch signal. Becomes ON when the contact point is ON because of the oil pressure. Transmission ECM input value.	
108	F/B Fluid Pressure	ON/OFF	Front brake oil pressure switch signal. Becomes ON when the contact point is ON because of the oil pressure. Transmission ECM input value.	
109	I/C Fluid Pressure	ON/OFF	Input clutch oil pressure switch. Becomes ON when the contact point is ON because of the oil pressure. Transmission ECM input value.	
110	LC/B Fluid Pressure	ON/OFF	Low coast brake oil pressure switch signal. Becomes ON when the contact point is ON because of the oil pressure. Transmission ECM input value.	
111	Signal of identified ECM	ON/OFF	Signal for identifying the DCCD ECM unit type (AUTO mode Yes or No). It shows ON if AUTO mode is Yes. DCCD ECM output value.	This item is applied only to vehicle equipped with DCCD.
112	LC/B Solenoid	ON/OFF	Low coast brake solenoid drive signal. Becomes ON at the time of drive signal output. Transmission ECM output value.	
113	LU&FWD/B Solenoid	ON/OFF	Lock-up & forward brake solenoid drive signal. Becomes ON at the time of drive signal output. Transmission ECM output value.	
114	Center Diff. Lamp1	ON/OFF	DCCD indicator light lighting signal. Becomes ON when the initial LSD torque setting is “LOCK”. DCCD ECM output value.	This item is applied only to vehicle equipped with DCCD.
115	Center Diff. Lamp2	ON/OFF	DCCD indicator light lighting signal. Becomes ON when the initial LSD torque setting is “Large”. DCCD ECM output value.	This item is applied only to vehicle equipped with DCCD.

No.	Items	Unit of measure	Contents	Remarks
116	Center Diff. Lamp3	ON/OFF	DCCD indicator light lighting signal. Becomes ON when the initial LSD torque setting is “Medium”. DCCD ECM output value.	This item is applied only to vehicle equipped with DCCD.
117	Center Diff. Lamp4	ON/OFF	DCCD indicator light lighting signal. Becomes ON when the initial LSD torque setting is “Small”. DCCD ECM output value.	This item is applied only to vehicle equipped with DCCD.
118	Center Diff. Lamp5	ON/OFF	DCCD indicator light lighting signal. Becomes ON when the initial LSD torque setting is “Very small”. DCCD ECM output value.	This item is applied only to vehicle equipped with DCCD.
119	Center Diff. Lamp6	ON/OFF	DCCD indicator light lighting signal. Becomes ON when the initial LSD torque setting is “FREE”. DCCD ECM output value.	This item is applied only to vehicle equipped with DCCD.
120	Parking Position Switch	ON/OFF	Parking brake switch signal. Becomes ON when the parking brake switch is ON. DCCD ECM input value.	This item is applied only to vehicle equipped with DCCD.
121	Center Diff. Relay	ON/OFF	DCCD relay drive signal. Becomes ON in auto mode and in manual mode when the initial LSD torque is other than “FREE”. DCCD ECM output value.	This item is applied only to vehicle equipped with DCCD.
122	AUTO/MANUAL Mode Switch	ON/OFF	DCCD manual mode switch signal. Becomes ON when the DCCD manual mode switch is ON. DCCD ECM input value.	This item is applied only to vehicle equipped with DCCD.
123	AUTO Mode Lamp	ON/OFF	DCCD AUTO indicator light lighting signal. Becomes ON when the DCCD is in auto mode. DCCD ECM output value.	This item is applied only to vehicle equipped with DCCD.
124	Fwd/B hydraulic pressure SW	ON/OFF	Forward brake oil pressure switch signal. Becomes ON when the contact point is ON because of the oil pressure. Transmission ECM input value.	

Body Integrated Unit

NOTE:
If you change the setup of Unit Customizing function, please be sure to follow service manuals when you work on this. If you set it incorrectly, it would be a cause of failures such as system troubles and etc.

No.	Items to be displayed	Unit of measure	Contents	Remarks
1	BATT voltage (control)	10 — 15 V	Battery continuity power supply. Input value to the BIU.	
2	BATT voltage (BACKUP)	10 — 15 V	Battery continuity power supply. Input value to the BIU.	
3	ABS_CM Power Voltage	10 — 15 V	Ignition system circuit voltage. Input value to the BIU.	
4	ACC voltage	10 — 15 V	ACC system circuit voltage. Input value to the BIU.	
5	Illumination VR Voltage	0 — 5 V	Input value from the illumination control dial.	
6	Illumi. output d-ratio	0 — 100%	Duty ratio for illumination control output from BIU. (Frequency:250Hz)	
7	Ambient temp sensor V	0 — 5 V	Input value from the ambient temperature sensor.	
8	Ambient Temperature	-40 — 87.5°C	Temperature is converted from input voltage to BIU.	
9	Fuel level voltage	0 — 8 V	Voltage value of fuel level sensors. Input value from the fuel level sensors to the BIU.	
10	Fuel level resistance	0 — 102.3 ohm	Resistance value of fuel level sensors. Input value from the fuel level sensors to the BIU.	
11	key-lock solenoid V	6 — 12 V	Output value to the key-lock solenoid. (The key lock functions that the key cannot be removed when the selector lever position is except for the P-range.)	
12	number of regist.	0 — 4Num.	Number of registered keys for keyless entry system.	
13	Front Wheel Speed	km/h	Average speed of the front wheels. Received from VDC/ABS ECM.	CAN data
14	VDC/ABS latest f-code	DTC display	Most recent trouble codes of the VDC/ABS system. Received from VDC/ABS ECM. As the items shown here are provisional codes, the DTC displayed by the VDC/ABS system shall be confirmed.	CAN data
15	Blower fan steps	0 — 2	Blower fan control mode. Received from the A/C ECM. 0 = OFF, 1 = Low, 2 = More than 2 levels	CAN data
16	Fuel level resistance 2	0 — 102.3 ohm	Fuel level sensor resistance value. Output value from the BIU to the combination meter.	CAN data

No.	Items to be displayed	Unit of measure	Contents	Remarks
17	Fuel consumption	cc/s	Momentary injection quantity every 50 msec, converted to the injection quantity per second. Received from Engine ECM.	CAN data
18	Coolant Temp.	-40 — 130°C	Engine coolant temperature. Received from Engine ECM.	CAN data
19	Vehicle longitudinal G	m/s^2	Acceleration/deceleration rate in the longitudinal direction. Received from VDC/ABS ECM.	CAN data
20	SPORT Shift Stages	0 — 7 Step	Manual mode operation information. Received from Transmission ECM. 0 = light OFF, 1 — 5 = gear position, 6 = fail, 7 = ATF temperature High/Low	CAN data
21	Shift Position	0 — 7	P-range = 7, R-range = 6, N-range = 5, D-range = 4, Manual = 8 (no input). With switching to manual mode, no input (8) is reached and the “SPORT shift stages” is changed. Received from Transmission ECM.	CAN data
22	VDC/ABS condition	0 — 4	Operating condition of VDC/ABS. Received from VDC/ABS ECM. 0 = ABS, 1 = TCS, 2 = VDC O (oversteering), 3 = VDC U (understeering), 4 = VDC OFF	CAN data
23	Destination Code	0 — 16	Vehicle specification classification. Received from the combination meter. 1 = Japan (normal), 2 = Japan (black face), 3 = Japan (with ADA), 4 = General (LH), 5 = Europe (LH), 6 = Saudi Arabia, 7 = Europe (RH), 8 = Australia, 9 = US, 10 = Canada	CAN data
24	Touch SW	0 — 64	By set value input from the center display to BIU, change is caused by pressing the button on the touch panel. However, change is limited to the following procedure. Touch the ‘INFO’ button → Touch ‘SET’ → Touch ‘Keyless entry’ or ‘Various settings’ (But no correspondence to RESET).	CAN data
25	key-lock warning SW	ON/OFF	Input value from the key-lock warning switch. Becomes ON when the ignition key is inserted into the key cylinder.	

No.	Items to be displayed	Unit of measure	Contents	Remarks
26	Stop Light Switch	ON/OFF	Input value from the brake switch. Becomes ON when the brake pedal is depressed.	
27	Front fog lamp SW input	ON/OFF	Input value from the front fog light switch. Becomes ON when the front fog light switch is turn ON.	
28	Rear fog lamp SW input	ON/OFF	Input value from the rear fog light switch. Becomes ON when the rear fog light switch is turn ON.	
29	TPMS input	ON/OFF	Display of the TPMS (Tire Pressure Monitoring System) registration status. Becomes ON when TPMS registration has been completed.	
30	lighting SW input	ON/OFF	Input value from the combination switch. Becomes ON when the headlights are set to ON.	
31	Door key-lock SW input	ON/OFF	Input value from the switch for the door key cylinder part. Becomes ON when the key is turned to the LOCK side.	
32	Door unlock SW input	ON/OFF	Input value from the switch for the door key cylinder part. Becomes ON when the key is turned to the UNLOCK side.	
33	Driver's door SW input	ON/OFF	Input value from the driver's door switch. Becomes ON when the door is opened.	
34	P-door SW input	ON/OFF	Input value from the passenger's door switch. Becomes ON when the door is opened.	
35	Rear right door SW input	ON/OFF	Input value from the rear right door switch. Becomes ON when the door is opened.	
36	Rear left door SW input	ON/OFF	Input value from the rear left door switch. Becomes ON when the door is opened.	
37	R Gate SW input	ON/OFF	Input value from the rear gate switch or the trunk lid switch. Becomes ON when the rear gate or the trunk is opened.	
38	Manual lock SW input	ON/OFF	Input value from the manual lock switch for the power window main switch part. Becomes ON when the manual lock switch is locked.	

No.	Items to be displayed	Unit of measure	Contents	Remarks
39	Manual unlock SW input	ON/OFF	Input value from the manual lock switch for the power window main switch part. Becomes ON when the manual lock switch is unlocked.	
40	Lock SW	ON/OFF	Input value from the door status switch of the latch part of the door on the driver's side. Becomes ON when the lock status of the door on the driver's side is locked.	
41	Bright SW input	ON/OFF	Input value from the bright switch. Becomes ON when the bright switch is set to ON. The bright switch is the function for switching the illumination of instrument panel, monitor, heater control panel, and audio to bright when the position light is ON.	
42	Shift Button SW Input	ON/OFF	Input value from the shift lock cancel button of the shift lever. Becomes ON when the shift lock cancel button is pressed.	
43	Economy Switch	ON/OFF	Input value from the economy switch. Becomes ON when the economy switch is turn on.	
44	Tiptronic Mode Switch	ON/OFF	Input value from the tiptronic mode switch (manual mode switch). Becomes ON in manual mode.	
45	TIP UP SW input	ON/OFF	Becomes ON with shifting up in manual mode.	
46	TIP DOWN SW input	ON/OFF	Becomes ON with shifting down in manual mode.	
47	P SW	ON/OFF	Input value from the P-range switch. Becomes ON only in the P-range.	
48	MT Reverse Switch	ON/OFF	Input value from the MT back -up light SW. Becomes ON when the shift lever is in the R range and the back-up light SW is set to ON.	
49	Kick Down Switch	ON/OFF	Input value from the kick down switch. This data is not being used now.	
50	R wiper ON SW input	ON/OFF	ON switch input value of the rear wiper switch. Becomes ON when the rear wiper switch is set to the ON position.	

No.	Items to be displayed	Unit of measure	Contents	Remarks
51	R wiper INT SW input	ON/OFF	INT switch input value of the rear wiper switch. Becomes ON when the rear wiper switch is set to the INT position.	
52	R washer SW input	ON/OFF	Input value from the rear washer switch. Becomes ON when the rear washer switch turn on.	
53	Wiper deicer SW input	ON/OFF	Input value from the wiper deicer switch. Becomes ON when the wiper deicer switch turn on.	
54	Rear Defogger SW	ON/OFF	Input value from the rear defogger switch. Becomes ON when the rear defogger switch turn on.	
55	Driver's Seat SW input	ON/OFF	Input value from driver's seat buckle switch. Becomes ON when the seat belt is fastened.	
56	P seatbelt SW input	ON/OFF	Normally ON when no load acts onto the passenger seat. When a load acts onto the passenger seat, it becomes ON when the seat belt has been fastened and OFF when the seat belt has not been fastened.	
57	Fr wiper input	ON/OFF	Input value from the front wiper switch. Becomes ON when the front wiper is operated.	
58	Parking Brake Switch Input	ON/OFF	Input value from the parking brake SW. Becomes ON when the parking brake is pulled and the parking brake SW is set to ON.	
59	Registration SW input	ON/OFF	Input value from the registration switch. Becomes ON when the registration connector of keyless entry system is connected.	
60	Identification SW input	ON/OFF	Identification of wagon or sedan. ON = Wagon, OFF = Sedan. Initial setting of the keyless entry system circuit.	
61	Driver's seat lock status SW input	ON/OFF	Input value from the driver's seat lock status switch. Becomes ON when doors are locked.	
62	Passenger's seat lock status SW input	ON/OFF	Input value from the passenger's seat lock status switch. Becomes ON when doors are locked.	

No.	Items to be displayed	Unit of measure	Contents	Remarks
63	R gate lock status SW input	ON/OFF	Input value from the rear gate lock status switch. Becomes ON when a rear gate is locked.	
64	Smart wake-up input	ON/OFF	Input value of the smart wake-up signal from the collated ECM. Becomes ON when the signal is input.	
65	Rr defogger output	ON/OFF	Output value to the rear defogger relay.Becomes ON when the rear defogger is operated.	
66	lock actuat. LOCK output	ON/OFF	Output value to the door lock actuator. Becomes ON when the lock signal is output.	
67	All seat UNLOCK output	ON/OFF	Output value to the door lock actuators of all seats. Becomes ON with output of the unlock signal.	
68	D-seat UNLOCK output	ON/OFF	Output value to the driver's door lock actuator. Becomes ON when the unlock signal is output.	
69	R gate/trunk UNLK output	ON/OFF	Output value to the rear gate/trunk lid lock actuator. Becomes ON when the unlock signal is output.	
70	Double lock output	ON/OFF	Output value to the door lock actuators. Becomes ON when the double lock signal is output.	
71	R wiper output	ON/OFF	Output value to the rear wiper motor. Becomes ON when the rear wiper is operated.	
72	Shift Lock Solenoid	ON/OFF	Output value to the shift lock solenoid. This solenoid becomes ON when both P range switch and brake switch are turn on.	
73	Key locking output	ON/OFF	Output value to the key-lock solenoid. Becomes ON when the solenoid is operated. (The key lock functions that the key cannot be removed when the selector lever position is except for the P-range.)	
74	wiper deicer output	ON/OFF	Output value to the wiper deicer relay. Becomes ON when the wiper deicer relay is operated.	
75	Starter cutting output	ON/OFF	Starter relay cut signal for the immobilizer system. Becomes ON with operation of the starter cut relay.	Application only for LEGACY 04 MY, 05 MY

No.	Items to be displayed	Unit of measure	Contents	Remarks
76	Hazard Output	ON/OFF	Output value of keyless answer-back. Becomes ON with hazard output.	Only when the keyless registration connector is not connected
77	Keyless Buzzer Output	ON/OFF	Output value to the keyless buzzer. Becomes ON at the time of buzzer output.	Only when the keyless registration connector is not connected
78	Belt buzzer output	ON/OFF	Output value to the belt buzzer. Becomes ON at the time of output to the belt buzzer.	
79	Horn Output	ON/OFF	Horn output of the security system. Becomes ON at the time of a system alarm.	
80	Siren Output	ON/OFF	Siren output of the security system. Becomes ON at the time of a security system alarm.	
81	D-belt warning light O/P	ON/OFF	Output value of the driver's seat belt warning lamp. Becomes OFF when the seat belt is fastened.	
82	P-belt warning light O/P	ON/OFF	Output value of the passenger's seat belt warning lamp. Becomes ON when a load is sensed for the front passenger seat. Becomes OFF when the seat belt is fastened.	
83	Illumination lamp O/P	ON/OFF	Output value of illumination control signal. Becomes ON when the position light is turned on. However, the ON time changes when the illumination brightness control dial is operated.	
84	Room lamp output	ON/OFF	Output value to the room lamp. Becomes ON when the room lamp lights. However, room lamp ON/OFF interlocked with BIU occurs only at the DOOR position.	
85	key illumi. lamp o/p	ON/OFF	Output value to the key illumination light. Becomes ON when the key illumination light is operated.	
86	R fog lamp output	ON/OFF	Output value to the rear fog light relay. Becomes ON when the rear fog light is operated.	
87	R fog lamp monitor	ON/OFF	The rear fog light monitoring circuit is installed in the BIU. Becomes ON when the rear fog light is operated.	

No.	Items to be displayed	Unit of measure	Contents	Remarks
88	Immobilizer lamp output	ON/OFF	Output value to the immobilizer pilot light in the combination meter. Becomes ON when the immobilizer pilot light is turned on.	
89	Keyless operation 1	Regist./Normal	Keyless mode judgement. Becomes “Registration” with registration mode. “Registration mode” is made when the registration connector is connected and the door lock switch is set to UNLOCK.	
90	Keyless operation 2	Deletion/Normal	Keyless mode judgement. Becomes “Deletion” with delete mode. Connect the keyless registration connector and perform key warning switch ON/OFF ten times within ten seconds while keeping the door lock switch to ON.	
91	EK alarm output	ON/OFF	The door opening status is put out to the alarm unit. Becomes ON when any door is open.	
92	TL alarm output	ON/OFF	Alarm output of the door alarm function. Becomes ON when a door is opened illegally while the door is in locked condition.	
93	CC Main Lamp	ON/OFF	Becomes ON when the cruise control main switch is set to ON. Received from the Engine ECM and transmitted to the combination meter.	CAN data
94	CC Set Lamp	ON/OFF	Becomes ON when the cruise control set switch is set to ON. Received from the Engine ECM and transmitted to the combination meter.	CAN data
95	SPORT Lamp	ON/OFF	Becomes ON with shifting into sports mode. Received from the Transmission ECM and transmitted to the combination meter.	CAN data
96	SPORT Blink	Blink/OFF	Brinks at the time of an AT fault. Received from the Transmission ECM and transmitted to the combination meter.	CAN data
97	ATF Temperature Lamp	ON/OFF	Becomes ON when the ATF temperature is abnormally high. Received from the Transmission ECM and transmitted to the combination meter.	CAN data

No.	Items to be displayed	Unit of measure	Contents	Remarks
98	ATF Blink	Blink/OFF	Brinks at the time of an AT fault. Received from the Transmission ECM and transmitted to the combination meter.	CAN data
99	ECO Lamp (AT)	ON/OFF	Becomes ON when the economy lamp lighting signal is ON. Received from Transmission ECM.	CAN data
100	ECO Lamp (MT)	ON/OFF	Becomes ON when the economy lamp lighting signal is ON. Received from Transmission ECM.	CAN data
101	Tire diameter abnormal 1	ON/OFF	Becomes ON when the FWD fuse is connected (when set to FF). Received from the Transmission ECM and transmitted to the combination meter.	CAN data
102	Tire diameter abnormal 2	Blink/OFF	Blinking at approximately the speed difference when tires with one size difference set on front and rear wheels. Received from the Transmission ECM and transmitted to the combination meter.	CAN data
103	Shift Up Indication	UP/OFF	Shift-up possible indication signal. Becomes UP when shift-up is possible.	Together with the arrow of the gear indication in the combination meter.
104	Shift Down Indication	DOWN/OFF	Shift-down possible indication signal. Becomes DOWN when shift-down is possible.	Together with the arrow of the gear indication in the combination meter.
105	SPORT Shift (buzzer 1)	ON/OFF	Shift down prohibition alarm. Becomes ON at the time of output to the buzzer. Received from the Transmission ECM and transmitted to the combination meter.	CAN data
106	SPORT Shift (buzzer 2)	ON/OFF	ATF abnormally high temperature alarm. Becomes ON at the time of output to the buzzer. Received from the Transmission ECM and transmitted to the combination meter.	CAN data
107	ABS/VDC Judging	ABS/VDC	Vehicle identification information. Received from VDC/ABS ECM.	CAN data
108	ADA Existence Judging	support / no support	Vehicle identification information. Becomes “support” if ADA (Active Driving Assist) is equipped.	CAN data
109	Small Light SW	ON/OFF	Input value from the position light switch. Becomes ON when the position lights are set to ON.	

No.	Items to be displayed	Unit of measure	Contents	Remarks
110	Headlamp	ON/OFF	Input value from the headlight switch. Becomes ON when the headlights are turned on.	
111	DRL	ON/OFF	Input value of the DRL (Daytime Running Lights) output of the DRL ECM. Becomes ON when the DRL are ON.	
112	High Beam	ON/OFF	Vehicle travelling information for ADA. Becomes ON when the head-lights are switched to high beam.	
113	Lh Turn	ON/OFF	Vehicle travelling information for ADA. Becomes ON when the left turn signal becomes ON.	
114	Rh Turn	ON/OFF	Vehicle travelling information for ADA. Becomes ON when the right turn signal becomes ON.	
115	Rr Defogger SW	ON/OFF	Input value from the rear defogger switch. Becomes ON when the rear defogger switch is turned on.	
116	Australia Judging Flag	Australia/Others	Output from the BIU to the Engine ECM.	
117	Large Diameter Tire	Large Tire/ Others	Tire identification information for the combination meter of models with 18 inch wheels. Correction of the error in the vehicle speed indication because of the 18-inch wheels. It is not become ‘Large Tire’ even when 18-inch wheels are mounted on a 17-inch vehicle.	
118	Number of cylinders	4 Cylinder/ 6 Cylinder	Discrimination information of vehicle	CAN data
119	Cam shaft specification	DOHC/SOHC	Discrimination information of vehicle	CAN data
120	Turbo	no support / TURBO	Discrimination information of vehicle	CAN data
121	E/G displacement (2.5L)	2.5 L/ OFF	Discrimination information of vehicle	CAN data
122	E/G displacement (3.0L)	3.0 L/ OFF	Discrimination information of vehicle	CAN data
123	AT Vehicle ID Signal	ON/OFF	Discrimination information of vehicle	CAN data
124	Blower fan information	ON/OFF	Blower fan information. Becomes ON when the blower fan is not OFF. Received from Engine ECM.	CAN data
125	Heater cock valve output	ON/OFF	Output value to the heater cock valve. Becomes ON at the time of heater cock valve operation.	

No.	Items to be displayed	Unit of measure	Contents	Remarks
126	Power Window (UP)	ON/OFF	Output value to the power window ECM. Becomes ON at the time of power window operation. The glass on the driver's side is raised when the keyless LOCK button is pressed continuously.	
127	Power Window (Down)	ON/OFF	Output value to the power window ECM. Becomes ON at the time of power window operation. The glass on the driver's side is lowered when the keyless UNLOCK button is pressed continuously.	
128	Keyless buzzer	ON/OFF	Output value to the keyless buzzer. Becomes ON at the time of keyless answer-back buzzer operation.	
129	Bright Request	ON/OFF	Input value to BIU. Becomes ON when a demand exists. Function for increase the brightness of instrument panel illumination, monitor, air conditioner, and audio when the lighting switch is ON.	
130	P/W ECM Failure	OK/NG	Power window ECM fault information. Becomes NG at the time of a fault.	CAN data
131	Keyless Hook SW	ON/OFF	Input value from the power window ECM. Becomes ON when the keyless hook switch is ON.	CAN data
132	Door lock SW (Open)	ON/OFF	Input value from the power window ECM. Becomes ON at the time of unlocking operation of the door lock switch (manual lock switch).	CAN data
133	Door lock SW (Close)	ON/OFF	Input value from the power window ECM. Becomes ON at the time of locking operation of the door lock switch (manual lock switch).	CAN data
134	Door Key SW (Open)	ON/OFF	Input value from the door key switch (switch of the door key cylinder part). Becomes ON at the time of unlocking operation.	
135	Door Key SW (Close)	ON/OFF	Input value from the door key switch (switch of the door key cylinder part). Becomes ON at the time of locking operation.	
136	Under hook registration	ON/OFF	Becomes ON at the time of registration mode for the keyless hook function.	

No.	Items to be displayed	Unit of measure	Contents	Remarks
137	Hook registration end	ON/OFF	Becomes ON at the time of keyless hook registration completion.	
138	Unlock request	ON/OFF	Becomes ON when the door hook code input is OK. Received from the power window ECM.	CAN data
139	Center display failure	OK/NG	Center display fault information. OK means system is normal, NG means system is abnormal. Received from the center display.	CAN data
140	NAVI Failure	OK/NG	Navigation system fault information. OK means system is normal, NG means system is abnormal. Received from the center display.	CAN data
141	IE Bus failure	OK/NG	IE bus fault information. At present, these data are not used.	
142	Auto A/C failure	OK/NG	Auto A/C ECM fault information. OK means system is normal, NG means system is abnormal. Received from the auto A/C ECM.	CAN data
143	EBD Warning Light	ON/OFF	Operating condition for the EBD warning light. Becomes ON when the warning lamp lights. Received from VDC/ABS ECM.	CAN data
144	ABS Warning Light	ON/OFF	Operating condition for the ABS warning light. Becomes ON when the warning lamp lights. Received from VDC/ABS ECM.	CAN data
145	VDC OFF flag	ON/OFF	VDC operation status. Becomes ON by VDC OFF (becomes ON when the VDC OFF switch becomes ON). Received from VDC/ABS ECM.	CAN data
146	VDC/ABS OK B	OK/NG	VDC/ABS system fault information. OK means system is normal, NG means system is abnormal. Received from the VDC/ABS ECM.	CAN data
147	Lighting I Switch Input	ON/OFF	Input value from the Combination SW. Becomes ON when the lighting SW is set to the Tail position.	
148	Lighting II Switch Input	ON/OFF	Input value from the Combination SW. Becomes ON when the lighting SW is set to the Head position.	
149	Dimmer Hi Switch Input	ON/OFF	Input value from the Combination SW. Becomes ON when the Dimmer & Passing SW is set to the "High beam" position.	

No.	Items to be displayed	Unit of measure	Contents	Remarks
150	Dimmer Pass Switch Input	ON/OFF	Input value from the Combination SW. Becomes ON when the Dimmer & Passing SW is set to the "Passing" position.	
151	Lighting I Lamp Output	ON/OFF	Output value to the tail & illumination relay. Becomes ON when the tail & illumination relay is operated.	
152	Lighting II Lamp Output	ON/OFF	Output value to the low beam relay. Becomes ON when the low beam relay is operated.	
153	Lighting Hi Lamp Output	ON/OFF	Output value to the high beam relay. Becomes ON when the high beam relay is operated.	For North American models: Becomes ON also at the time of DRL lighting.
154	Front Fog Lamp Output	ON/OFF	Output value to the front fog light relay. Becomes ON when the front fog light relay is operated.	
155	DRL Cancel Output	ON/OFF	Output value to the DRL (Daytime Running Lights) cancel circuit. Becomes ON when the Dimmer & Passing switch is set to the "High beam" position.	This item is applied only to North American models.
156	Power Supply Tr	ON/OFF	Output value to the transistor supplying back-up voltage to the headlight. Becomes ON in the following cases. When the ignition SW is OFF and the lighting SW is set to the "Tail" position. Becomes ON when the lighting SW is set to the "ACC" position or to ON.	
157	Foot Lamp Output	ON/OFF	Output value to foot lamp RH or LH. Becomes ON when foot lamp RH or foot lamp LH is switched on.	
158	Off delay time	OFF, Short, Normal, Long	Set value for the delay time until the room lamp goes out.	
159	Auto lock time	20, 30, 40, 50, 60 sec	Set value for the auto locking time.	This item is applied only to models other than for North America and U.K.
160	Outside Temp. Offset	°C(-2.0, -1.5, -1.0, -0.5, 0, 0.5, 1.0, 1.5, 2.0)	Offset value for discrepancy correction of outside air temperature and display value.	BIU can be set in increments of 0.5°C but the display only shows increments of 1°C.

No.	Items to be displayed	Unit of measure	Contents	Remarks
161	Rr defogger op. mode	Continue/Normal	Set value for the rear defogger operation time. Normal: Automatically stops 15 minutes after switch has been turned on. Continue: Turns on for 15 minutes and turns off for 2 minutes repeatedly until switch is turned off.	
162	Wiper deicer op. mode	Continue/Normal	Set value for the wiper deicer operation time. Normal: Automatically stops 15 minutes after switch has been turned on. Continue: Turns on for 15 minutes and turns off for 2 minutes repeatedly until switch is turned off.	
163	Security Alarm Setup	ON/OFF	Set value for the alarm at the time of security system operation. ON: The alarm (hazard, horn or siren) operates. OFF: The alarm does not operate.	This item is applied only to models for Japan and North America.
164	Impact Sensor Setup	ON/OFF	Impact sensor operation set value. ON: The impact sensor operates. OFF: The impact sensor does not operate.	When set to “ON”, it becomes effective when the “Impact sensor” is set to “ON”. This item is applied only to models for Japan and North America.
165	Alarm delay setup	ON/OFF	Set value for the delay time of the security system. ON: The alarm monitoring function operates 30 sec after keyless locking. OFF: The alarm monitoring function operates simultaneously with keyless locking.	This item is applied only to models for Japan and North America.
166	Lockout prevention	ON/OFF	Set value for the key lockout prevention function. ON: The lockout prevention function operates. OFF: The lockout prevention function is stopped.	This item is applied to models other than U.K.

No.	Items to be displayed	Unit of measure	Contents	Remarks
167	Impact sensor	ON/OFF	Set value of the impact sensor equipped or not equipped. ON: Control in impact sensor installed mode. OFF: Control in impact sensor not installed mode.	Must be set to “OFF” for vehicles not equipped with an impact sensor. Warning (hazard, horn or siren) operates erroneously when set to “ON”. This item is applied only to models for Japan and North America.
168	Siren setting	ON/OFF	Set value of the siren equipped or not equipped. ON: The siren operates at the time of alarm operation. OFF: The horn operates at the time of alarm operation.	Must be set to “OFF” for vehicles not equipped with a siren. When set to “ON”, the horn does not operate at the time of alarm operation. This item is applied only to Japanese models.
169	Answer-back buzzer setup	ON/OFF	Answer-back buzzer operation set value. ON: The buzzer operates at the time of keyless lock/unlock operation. OFF: The buzzer does not operate at the time of keyless lock/unlock operation.	
170	Hazard answer-back setup	ON/OFF	Hazard answer-back operation set value. ON: The hazard lamp operates at the time of keyless lock/unlock operation. OFF: The hazard lamp does not operate at the time of keyless lock/unlock operation.	
171	Automatic locking setup	ON/OFF	Auto lock operation set value. ON: Auto lock operates. OFF: Auto lock does not operate.	When set to “ON”, it becomes effective when “Auto locking” is set to “ON”. This item is applied to models other than for North America and U.K..
172	Ans.-back Buzzer	ON/OFF	Set value of the answer-back buzzer equipped or not equipped. ON: Control in answer-back buzzer installed mode. OFF: Control in answer-back buzzer not installed mode.	Must be set to “OFF” for vehicles not equipped with an answer-back buzzer.

No.	Items to be displayed	Unit of measure	Contents	Remarks
173	Auto locking	ON/OFF	Set value of the auto lock equipped or not equipped. ON: Control in auto locking installed mode. OFF: Control in auto locking not installed mode.	Must be set to “OFF” for vehicles not equipped with auto locking. This item is applied to models other than for North America and U.K.
174	Initial Keyless Setting	—	Function for initializing the set values related to the keyless entry system.	No.141:30 sec., No.150:OFF, No.151:ON, No.152:ON, No.153:OFF
175	Initial button setting	—	Function for initializing the set values for the various function settings.	No.140:Normal, No.142:Normal, No.143:Normal, No.147:ON
176	Initial Security setting	—	Function for initializing the set values related to the security system.	No.144:OFF, No.145:OFF, No.146:ON, No.149:OFF
177	Select unlock switch	Selection/ALL	Set value for switching between select unlock and all seats unlock. Selection: Control in select unlock mode. ALL: Control in all seats unlock mode.	This item is applied only to European models.
178	Passive Alarm	ON/OFF	Passive alarm system ON/OFF set value. ON: Control in passive alarm system equipped mode. OFF: Control in passive alarm system not equipped mode.	This item is applied only to North American models.
179	Door open warning	support / no support	Set value for the door open warning function. support: When door open condition continues for 30 minutes or more, the room lamp, the key ring illumination, and the door warning lamp interlocked with doors will be turned off to prevent battery failure. no support : Room lamp, key ring illumination, and door warning are lit continuously.	

No.	Items to be displayed	Unit of measure	Contents	Remarks
180	Dome Light Alarm Setting	ON/OFF	Set value for room lamp lighting or not at the time of alarm by the security system. ON: The room lamp is lit continuously at the time of alarm. OFF: At the time of an alarm, the room lamp goes out after the set delay time.	This item is applied only to models for Japan and North America.
181	Map Light Setting	ON/OFF	Set value whether the map lamp is to be light interlocked to the room lamp or not at the time of door opening. ON: The map lamp also light interlocked with the dome light. OFF: The map lamp remains off and does not light interlocked with the dome light.	
182	Belt Warning Switch	ON/OFF	Setting value that controls activation/non-activation of the Seat Belt Warning System warning buzzer and warning light.	
183	Keyless P/W Switch	ON/OFF	Setting value that controls whether or not the power window will operate when the keyless lock/unlock button is depressed and held down.	This item is applied only to Japanese models.
184	A/C ECM setting	support / no support	Set value of the auto A/C ECM equipped or not equipped. Set to “support” for vehicles equipped with the A/C ECM.	When this item is not set correctly, the illumination control may not function correctly.
185	P/W ECM setting	support / no support	Set value of the power window ECM equipped or not equipped. Set to “support” for vehicles equipped with power window ECM.	
186	Center display setting	support / no support	Set value of the center display equipped or not equipped. Set to “support” for vehicles equipped with a center display.	When this is set to “no support” for vehicles equipped with a center display, the center display information may not be displayed correctly.
187	wiperdeicer	support / no support	Set value of the wiper deicer equipped or not equipped. Set to “support” for vehicles equipped with a wiper deicer.	When this is set to “no support” for vehicles equipped with a wiper deicer, the wiper deicer will not operate even when the wiper deicer switch is set to ON.

No.	Items to be displayed	Unit of measure	Contents	Remarks
188	Rear fog light setting	support / no support	Set value of the rear fog lamp equipped or not equipped. Set to “support” for vehicles equipped with a rear fog lamp.	When this is set to “no support” for vehicles equipped with a rear fog lamp, the rear fog lamp will not operate when the rear fog lamp switch is set to ON.
189	Illumination Control On/Off	support/no support	Illumination control function effective/disabled setting. Set to "support" for vehicles equipped with illumination control.	
190	Sedan/Wagon Setting	Wagon/Sedan	Vehicle type set value. Set to "Wagon" for wagons and to "Sedan" for sedans.	
191	MT/AT Setting	AT/MT	Transmission type set value. Set to "AT" for AT vehicles and to "MT" for MT vehicles.	
192	6MT Setting	6MT/Other than 6MT	Transmission type set value. Set to "6MT" for 6MT vehicles.	
193	Double Lock On/Off Setting	support/no support	Double lock. Function effective/disabled set value. Set to "support" for vehicles equipped with double lock.	
194	Factory or Market setting	Factory/Market	Factory mode set value. This item must be set to “Market”.	In case of setting to “Factory”, the set values for No. 163 to 166 all are set to “no support”, so that the corresponding items must be set again.
195	Security setup	ON/OFF	Set value of the security system equipped or not equipped. Set to “ON” for vehicles equipped with a security system.	This item applies only to models for U.K.

Communication Error Code List

Error Message

- Interface box is not connected.
- Communication error has occurred.
- Not enough memory to execute application.
- Communication port could not be opened.
- Write operation to the communication port failed.
- Read operation from the communication port failed.
- Error occurred while communicating with the interface box.
- Communication initialization failed.
- Interface box cannot be found.
- A valid interface box is not connected.
- System does not Support this Function.
- Printing cannot be executed with the selected printer. Select another printer, and execute the command again.

Error Code	Required Action
4007 4112	Check the status of the USB cable connection. (There may be a break in the USB cable.)
4008 4015 4112	Data is not being sent from the control module of the system for which fault diagnosis is being performed. Confirm that the ignition switch is turned on. Also confirm that interface box power is turned on.
4100	There is not enough PC memory. If there are other applications running on the PC, shut them down.
4108 4109 4110 4112	There is a problem with the USB port that is currently being used. If the PC has more than one USB port, try using a different one. If the PC has only one USB port, it may be defective. Check the USB port.
4111 4112 4113 4114 4115 4116 4117 4118	Digital noise may be getting into the USB cable and/or diagnosis cable, causing a problem with communication. Eliminate the source of the digital noise.
4119 4200	The USB device driver is not installed on the PC. Re-install the latest PC application.
4201 4202	The vehicle for which fault diagnosis is being performed does not support the SSMIII. Also, there may be some abnormality with some of the PC application data. Re-install the latest PC application.
4208	Printing cannot be executed with the selected printer. Select another printer, and execute the command again. Also, check the printer cable connection and printer settings.

Error Message

- Present software doesn’t support this System. Communication will be finished.

Error Code	Required Action
None	The vehicle for which fault diagnosis is being performed does not support the SSMIII. Also, there may be some abnormality with some of the PC application data. Re-install the latest PC application.

Error Message

- Communication Initialization Failed. Communication initialization will be finished.

Error Code	Required Action
None	• The selection on the menu for selecting a particular system may be for a system that is not equipped on the vehicle for which fault diagnosis is performed. • Perform the same action as that described for error code 4112.

ECM Reprogramming Error Code List

ECM Reprogramming Error Code List (PC Display)

Pass Thru<SSMIII>&Remote<NSM>

Error Code	Error Message	Cause	Corrective action
102	Cannot open file.	If failed to open the PAK file.	1. Make sure if the PAK file is correct. 2. Close all applications opened. 3. Re-start Windows. 4. Re-install SSMIII (PC application)
103	Error occurred while reading file.	If failed to read from the PAK.	1. Make sure if the PAK file is correct. 2. Close all applications opened. 3. Re-start Windows. 4. Re-install SSMIII (PC application)
104	Error occurred while writing file.	If failed to write to the PAK file.	1. Make sure if there is enough space in selected drive for its safe. 2. Make sure if the PAK file is correct. 3. Close all applications opened. 4. Re-start Windows. 5. Re-install SSMIII (PC application)
105	The file's format is invalid. Specify a correct file.	If the PAK file format is invalid.	1. Make sure if the PAK file is correct. 2. Close all applications opened. 3. Re-start Windows. 4. Re-install SSMIII (PC application)
107	Error occurred in the encryption.	If failed to encrypt the PAK file.	1. Close all applications opened. 2. Re-start Windows. 3. Re-install SSMIII (PC application)
108	Error occurred in the decryption. Check the decryption keyword.	If failed to create a complex file.	1. Confirm the complexed key word. 2. Make sure if the PAK file is correct.
1000	Memory allocation error occurred.	If the PC memory does not have enough space.	1. Close all applications opened. 2. Re-start Windows.
1001	The file's format is invalid or not supported.	If thePAK file format is invalid.	Make sure if the PAK file is correct.

Pass Thru<SSMIII>

Error Code	Error Message	Cause	Corrective action
4000	Cannot make a thread.	It might be a lack of memories, opened too many applications simultaneously or etc.	1.Close all applications opened. 2. Re-start Windows.
4001	Cannot find the Pass-Thru device.	Cannot find the Pass-thru device, which is registered the registry.	Re-install SSMIII (PC application).
4004	Received Invalid ECU messages.	If a format of the message received from ECM is invalid.	1. Make sure if the ignition switch is in “ON” position. 2. Re-try after the data link connector is connected. 3. Confirm the connection of the USB cable.
4007	NO response from the ECU. Check the cause of NO response.	1. If there is no response from ECM. 2. Displayed if the connector causes a connection failure. It might be a harness failure as well.	1. Make sure if the ignition switch is in “ON” position. 2. Re-try after the data link connector is connected. 3. Check the harness of the vehicle. 4. Replace ECM if the above 1, 2 & 3 methods do not work.
4009	Received invalid ECU identification (SSMID).	If the ECM identification (SSM ID) received from ECM is invalid.	1. Make sure if the ignition switch is in “ON” position. 2. Re-try after the data link connector is connected. 3. Confirm the connection of USB.
4011	Cannot reprogram while the engine is running. Stop the engine to retry.	If an engine revolution is detected by the reprogramming condition check.	Shut-down the engine.
4013	Connect the test mode connector and click OK to retry.	If you detect the test mode connector not connected by the reprogramming condition check.	Make sure if the test mode connector is connected.
4014	The read memory switch is NOt connected. Connect the read memory switch to retry.	If you detect the read memory connector not connected by the reprogramming condition check.	Make sure if the read memory connector is connected.
4015	The ignition switch turns off. Retry from the beginning.	If an ignition OFF is detected by the reprogramming condition check.	Make sure if the ignition switch is in “ON” position.
4016	The shift position is not P. Select the P position to retry.	If you detect the shift range is not the “P” range by the reprogramming condition check.	Make sure if the shift range is in “P” position.

Error Code	Error Message	Cause	Corrective action
4018	Battery voltage is out of specified range. Reprogramming cannot be done.	If you detect the battery voltage is out of the range of standardized range by the reprogramming condition check. (Standardized range of the battery voltage: 10V to 14V)	1. Replace the battery with a new one or charge the battery. It is prohibited to rewrite during battery charging. 2. As for the case of “Off the Car” reprogramming, adjust generated voltage of the inverter within the range of the standard voltage.
4019	ECU flash ROM is not rewritable. Reprogramming is aborted.	If you detect the flash ROM in ECM is not rewritable by the reprogramming condition check.	Re-try from the first step after ignition OFF.
4021	Error occurred while rewriting. Reprogramming is aborted.	If an error on the check sum after the control software is transferred is detected. (Failed to transfer the control software.)	1. Make sure if the PAK file is correct. 2. Re-try after the data link connector is reconnected. 3. Confirm the connection of the USB cable. 4. Re-try from the first step after ignition OFF.
4022	Error occurred while rewriting. Reprogramming is aborted.	If an error on the check sum after the application software is transferred is detected. (Failed to transfer the application software.)	1. Make sure if the PAK file is correct. 2. Re-try after the data link connector is reconnected. 3. Confirm the connection of the USB connection. 4. Re-try from the first step after ignition OFF.
4023	Error occurred while rewriting. Reprogramming is aborted.	If an error occurs while the control software is transferred.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4024	Error occurred while rewriting. Reprogramming is aborted.	If an error occurs while the application software is transferred.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4025	The ECU does not have valid identification of after rewriting. Rewriting may not be complete.	If a ROM ID after the reprogramming did not match with an expected one.	Make sure if the PAK file is correct.
4028	Latest logic has already been installed.	If you try to re-execute reprogramming on ECM, which has already been reprogrammed. (If the ECM has already been updated.)	Reprogramming is not necessary.

Error Code	Error Message	Cause	Corrective action
4029	This ECU is not suitable for reprogramming.	If you perform reprogramming on ECM, which is not registered in the PAK file. (If ECM is not the one applicable.)	1. Make sure if the PAK file is correct. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4030	CanNOt erase the Flash ROM on the ECU. Reprogramming is aborted.	If failed to erase the flash ROM on ECM.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4031	Error occurred in communication. Reprogramming is aborted.	If failed to restart (reset) ECM.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4032	Error occurred in communication. Reprogramming is aborted.	If an error occurs while communicating with ECM (Start Communication).	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4033	Error occurred in communication. Reprogramming is aborted.	If an error occurs while communicating with ECM (Access Timing Parameter).	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4034	The verification has failed. Reprogramming is aborted.	If an error occurs during the security verification before the reprogramming.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4035	Error occurred in communication. Reprogramming is aborted.	If a communication error occurs while the condition check for reprogramming.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.

Error Code	Error Message	Cause	Corrective action
4036	Error occurred in communication. Reprogramming is aborted.	If an error occurs while communicating with ECM (Request Download).	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4037	Error occurred in communication. Reprogramming is aborted.	If an error occurs while communicating with ECM (Start Diagnostic Session).	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4040	Error occurred while rewriting. Reprogramming is aborted.	If an error occurs while communicating with ECM (Transfer Data).	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4041	Error occurred while rewriting. Reprogramming is aborted.	If an error occurs while communicating with ECM (Check SUM).	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4042	Cannot clear the memory.	If an error occurs while communicating with the ECM (Memory Clear). It may occur the error if the ignition key is operated too quickly. (Wait 3 seconds after the ignition key is off.)	1. Perform the following steps. 1) The ignition key is OFF for 3 seconds, then ignition key is ON for 3 seconds. 2) Perform memory clear by using SSMIII. 3) The ignition key is OFF for 3 seconds. If reprogramming starts, it is successful. 2. Make sure the connection of the USB connector.
4043	Cannot erase the Flash ROM on the ECU. Reprogramming is aborted.	If an error occurs while communicating with ECM (Erase Flash).	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4045	Cannot reprogram when the vehicle is running. Stop the vehicle to retry.	If speed of the vehicle is detected by the reprogramming condition check.	The vehicle stops. (vehicle speed is zero).

Error Code	Error Message	Cause	Corrective action
4046	Error occurred in the Pass-Thru device.	If an error is detected from the pass-thru device's error.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection.
4046:7	Cannot open communication port.	If SDI is not connected.	1. Make sure if the ignition switch is in 'ON' position. 2. Confirm if the power of SDI is ON. 3. Re-try after the data link connector is reconnected. 4.Make sure the connection of the USB cable.
4047	Programming voltage is below specified low limit. Reprogramming is aborted.	If the voltage (Vpp) for writing is below the standard. It might be a harness failure.	1. Check the harness of the vehicle. 2. Replace ECM.
4048	Programming voltage is above specified high limit. Reprogramming is aborted.	If the voltage (Vpp) for writing is higher than the standard.	1. Check the harness of the vehicle. 2. Replace ECM.
4049	Programming voltage is out of specified range. Reprogramming is aborted.	If the voltage (Vpp) for writing does not meet the standard. It might be a harness failure.	1. Check the harness of the vehicle. 2. Replace ECM.
4053	Cannot set reprogramming voltage. Reprogramming is aborted.	If failed to apply the voltage (Vpp) for writing.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection.
4054	Cannot find the supported device. Reprogramming is aborted.	If the pass-thru device registered in the registry can not be found.	Re-install SSMIII. (PC application)
4055	Entry of boot mode has failed.	Migration to the ECM reprogramming mode is failed.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4056	Error occurred in communication.	Communication error	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection.
4057	Latest logic has already been installed.	If the sub-logic has already been updated when the main logic and the sub-logic are rewritten simultaneously.	Reprogramming is not necessary.
4058	Latest logic has already been installed.	If the main logic has already been updated when the main logic and the sub-logic are rewritten simultaneously.	Reprogramming is not necessary.

Error Code	Error Message	Cause	Corrective action
4059	No response from the ECU.	If no response from the sub-logic when the main logic and the sub-logic are rewritten simultaneously.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4060	No response from the ECU.	If no response from the main logic when the main logic and the sub-logic are rewritten simultaneously.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4061	This ECU is not suitable for reprogramming.	If the sub-ECM is not an applicable one when the main logic and the sub-logic are rewritten simultaneously.	Reprogramming is not necessary
4062	Rewrite is not done.	If there is no applicable ECM for reprogramming.	Reprogramming is not necessary
4063	The delivery mode connector is not connected. Connect the delivery mode connector to retry.	If the test mode connector is not connected	Make sure the connection of the test mode connector.
4064	Auto Mode is not valid for this vehicle. Use Manual Mode.	If the auto mode is selected to the manual selection data.	Perform reprogramming after selecting the manual mode.
4065	Selected PART NO/ROM ID are not for this vehicle. Select the Part NO/ROM ID again.	The error occurs if a vehicle is not the one with selected parts number and the ROM ID, which are specified when the manual selection was rewritten.	Perform reprogramming by re-selecting the applicable one for writing in the manual mode.
4066	Session mode failure. Turn off the ignition switch and retry.	Error on the session mode due to it is the default session. * If it is the default session after the session was changed to the extended session.	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF.
4067	Session mode failure. Turn off the ignition switch and retry.	Error on the session mode due to it is the programming session. * If it is the programming session while the initial communication. * If it is the programming session after the session was changed to the extended session.	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF.

Error Code	Error Message	Cause	Corrective action
4068	Session mode failure. Turn off the ignition switch and retry.	Error on the session mode due to it is the extended session. * If it is the extended session while the initial communication.	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF.
4100	Version code of software for rewrite control is NG.	If the version of the control software in ECM is not correct.	Make sure if the PAK file is correct.
4101	Error on rewrite data in flash ROM.	If an error occurs during ECM rewriting.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4102	Communication speed (bps) can not be set.	If the baud rate which does not meet ECM standard is specified by ECM.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4103	Rewrite time exceeds the limit.	If exceeded the limit of the number of ECM reprogramming.	Replace ECM.
4104	The range of the Rewriting Voltage is not satisfied. Check the contact of OBD Connector. After try to rewrite again.	If the voltage (Vpp) input to the ECM for writing does not meet the standard. (judged by ECM). It might be a harness failure.	1. Re-try by reconnecting the cable connector or replace the cable with a new one due to it might be a contact failure of the connector. 2. Make sure the harness of the vehicle.
4105	Software for rewrite control is NG.	If the control software on ECM is not correct.	Make sure if the PAK file is correct.
4106	Rewritten software for engine control in ECM is NG.	If the engine control software on ECM is not correct.	Make sure if the PAK file is correct.
4107	Error occurred in communication.	Communication error with ECM	Re-try from the first step after the ignition OFF.
4108	Programming voltage is below specified low limit. Reprogramming is aborted.	Communication error	Re-try from the first step after the ignition OFF.
4150	“Is IG. SW on?”, “engine is stalling.” Procedure is trying again.	The error for rewriting request on ECM. ECM refuses its rewrite. If the engine is running or the ignition is OFF.	1. Keep the following steps. 1) Stop the engine. 2) The Ignition key is in “ON” position. 2. If the above “1.” do not work, replace ECM with a new one.

Error Code	Error Message	Cause	Corrective action
4152	No response from ECM to rewrite signal.	No response from ECM on the error with rewriting request. This error is displayed once only after the communication can be done. It might be a disconnection error such as a contact failure during the rewriting. Also, it may be a harness failure.	1. Re-try after the data link connector is reconnected. 2. Make sure the harness of the vehicle.
4153	No response from ECM.	The error not responded from ECM.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Make sure the harness of the vehicle.
4155	Rewrite voltage is NG. Is connector connection OK? After confirmation, click “OK” then return to forward Vpp signal.	Voltage (Vpp) for writings input to the ECM is reported as an error. It is judged by ECM. Displayed if the voltage for writings is not normal. It might be a harness failure.	1. Re-try by reconnecting the cable connector or replace the cable with a new one due to it might be a contact failure of the cable. 2. If the above action does not work, replace the ECM with a new one.
4157	Received error code signal of flash ROM.	Communication error on ECM. ECM judged that an error on the rewriting. If a rewriting error occurs in ECM.	Replace the ECM with a new one. (ECM failure).
4401	Error occurred while rewriting. Click “YES” to reprogram again.	Confirmation on retry after the rewriting error.	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Confirm if the PAK file is correct. 4. Re-try from the first step after the ignition OFF.
4402	Error in rewritten data verifying. Click “YES” to reprogram again.	Confirmation on retry after the verifying error.	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Confirm if the PAK file is correct. 4. Re-try from the first step after the ignition OFF.
4403	Turn off the ignition switch and retry. If the error repeats, possibly CAN failure.	If the message, “Off the car Reprogramming?”, appeared and you clicked “No”, although it was not reprogrammed off the car. (If you do the reprogramming on the car, normally the message, “Off the car Reprogramming?”, does not appear.)	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF.

Error Code	Error Message	Cause	Corrective action
4404	Failed to change the session mode. Reprogramming is aborted.	If an error occurs while communicating with ECM (Diagnostic Session Control	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.
4405	Error occurred in communication. Reprogramming is aborted.	If an error occurs while communicating with ECM (Control DTC Setting).	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.
4406	Error occurred in communication. Reprogramming is aborted.	If an error occurs while communicating with ECM (Communication Control).	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.
4407	The verification has failed. Reprogramming is aborted.	If an error occurs on security verification before the reprogramming.	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.
4408	Error occurred in communication. Reprogramming is aborted.	If an error occurs while communicating with ECM (Request Download).	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.
4409	Error occurred while rewriting. Reprogramming is aborted.	If an error occurs while transfer the program.	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.

Error Code	Error Message	Cause	Corrective action
4411	Error occurred while rewriting. Reprogramming is aborted.	If an error occurs while communicating with ECM (Request Transfer Exit).	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.
4412	Error occurred while rewriting. Reprogramming is aborted.	If an error is detected on the check SUM after the program was transferred or no response to the requirement.	1. Confirm if the PAK file is correct. 2. Re-try after the data link connector is reconnected. 3. Confirm the connection of the USB connection. 4. Re-try from the first step after the ignition OFF.
4413	Error occurred in communication. Reprogramming is aborted.	If an error occurs while communicating with ECM (Request Download).	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.
4414	Cannot erase the Flash ROM on the ECM. Reprogramming is aborted.	If the ECM flash ROM cannot be deleted .	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF.
4415	Error occurred while rewriting. Reprogramming is aborted.	If an error occurs while transfer the program	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.
4416	Error occurred while rewriting. Reprogramming is aborted.	If an error occurs while communicating with ECM (Request Transfer Exit).	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.

Error Code	Error Message	Cause	Corrective action
4417	Error occurred while rewriting. Reprogramming is aborted.	If an error is detected on the check SUM after the program was transferred or no response to the requirement.	1. Confirm if the PAK file is correct. 2. Re-try after the data link connector is reconnected. 3. Confirm the connection of the USB connection. 4. Re-try from the first step after the ignition OFF.
4418	Error occurred in communication. Reprogramming is aborted.	If an error occurs while communicating with ECM (Request Upload).	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.
4419	Error occurred in communication. Reprogramming is aborted.	If an error occurs while communicating with ECM (Read out ROM) or while the verification.	1. Confirm if the PAK file is correct. 2. Re-try after the data link connector is reconnected. 3. Confirm the connection of the USB connection. 4. Re-try from the first step after the ignition OFF.
4420	Error occurred while rewriting. Reprogramming is aborted.	If an error occurs while communicating with ECM (Request Transfer Exit). (Read out ROM)	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.
4421	Cannot clear the memory.	If an error occurs while communicating with ECM (Memory clear).	1. Perform the following steps. 1) The ignition key is OFF for 3 seconds, then ignition key is ON for 3 seconds. 2) Memory clear by using SSMIII. 3) The ignition key is OFF for 3 seconds. 2. Make sure the connection of USB connector.

Error Code	Error Message	Cause	Corrective action
4422	Cannot clear the memory.	If an error occurs while communicating with the integrated unit or ABS (memory clear).	1. Perform the following steps. 1) The ignition key is OFF for 3 seconds, then ignition key is ON for 3 seconds. 2) Memory clear by using SSMIII. 3) The ignition key is OFF for 3 seconds. 2. Make sure the connection of USB connector.
4423	Cannot clear the memory.	If an error occurs while communicating with the integrated unit (Read DTC) or if the acquired DTC are more than one.	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.
4425	Cannot clear the memory.	If an error occurs while communicating with ABS (Start Diagnostic Session).	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.
4501	Reprogramming has failed. Click “YES” to reprogram again.	The error is detected on the check SUM.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Confirm if the PAK file is correct. 4. Re-try from the first step after ignition OFF.
4517	Error in rewritten data verifying. Click “YES” to reprogram again.	The error is detected during the verification.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Confirm if the PAK file is correct. 4. Re-try from the first step after ignition OFF.

Remote<NSM>

Error Code	Error Message	Cause	Corrective action
3000	Cannot open the serial port.	If failed to open the RS-232C communication port using for writing to the cartridge.	1. Confirm if the COM port number for the PC cable is the same number as the one selected at the option. 2. Confirm the connection of the PC cable. 3. Confirm if NSM power is ON. 4. Close all the applications, which are opened. (Especially applications, which are using the COM port.)
3001	Cannot write to serial port.	If failed to transmit to the RS-232C communication port using for writing to the cartridge.	1. Make sure if the COM port number for the PC cable connection is as the same number as the one specified at the option. 2. Confirm the connection of the PC cable. 3. Make sure if the NSM power is ON. 4. Close all of the other applications opened. (Especially for an application, which is using the COM port.)
3002	Cannot read from serial port.	If you failed to receive from the RS-232C communication port using for writing to the cartridge.	1. Make sure if the COM port number for the PC cable connection is as the same number as the one specified at the option. 2. Confirm the connection of the PC cable. 3. Make sure if the NSM power is ON. 4. Close all of the other applications opened. (Especially for an application, which is using the COM port.)
3012	User cancelled.	If the rewriting process of the cartridge is cancelled by clicking “NO” key during the process.	Perform the down-load (Remote) again if necessary.
3022	Error occurred while erasing the cartridge.	If failed to erase the cartridge flash ROM.	1. Make sure the PC cable connection. 2. Re-install SSMIII. (PC application) 3. Replace the cartridge.

Error Code	Error Message	Cause	Corrective action
3023	Error occurred while writing the cartridge.	If failed to write to the cartridge flash ROM.	1. Make sure the PC cable connection. 2. Re-install SSMIII. (PC application) 3. Replace the cartridge.
3024	Error occurred while reading the cartridge data.	If failed to read the data on the cartridge.	1. Make sure the PC cable connection. 2. Re-install SSMIII. (PC application) 3. Replace the cartridge.
3025	Timeout occurred during communication.	If a time-out occurs during the communication of the cartridge rewriting.	1. Make sure the PC cable connection. 2. Close all of the other applications opened. 3. Re-start Windows. 4. Re-install SSMIII. (PC application)
3031	Cancelled rewriting the cartridge. The cartridge is invalid.	If the rewriting process on the cartridge is cancelled.	Perform the down-load (Remote) again.
3032	Error occurred while rewriting the cartridge. The cartridge is invalid.	If the rewriting process on the cartridge is stopped by an error.	Perform the down-load (Remote) again.
3054	Rewriting the cartridge has failed. The cartridge is invalid.	If an error occurs on the check SUM after rewriting the cartridge.	1. Make sure the PC cable connection. 2. Replace the cartridge.

ECM Reprogramming Error Code List (NSM LCD Display)

Remote<NSM>

Error Code	Error Message	Cause	Corrective action
-	Command Error Occurred!	If an undefined command is used between the PC and NSM.	1. Make sure the RS232C cable connection. 2. Follow the steps with the error message on the PC.
-	Formatting Error Occurred!	If the command parameter used between the PC and NSM has an error.	1. Make sure the RS232C cable connection. 2. Follow the steps with the error message on the PC.
-	Error occurred during writing	If failed to rewrite the flash memory in the cartridge.	Make sure whether it is writable if the cartridge is write-protect.
-	Error Occurred Deleting!	If failed to delete the flash memory in the cartridge.	Make sure whether it is writable if the cartridge is write-protect.

Error Code	Error Message	Cause	Corrective action
-	Read error occurred	If failed to read the data in the cartridge.	Make sure the RS232C cable connection.
-	Communication Error Occurred!	If a serial communication error or command time-out has occurred.	1. Make sure the RS232C cable connection. 2. Follow the steps with the error message on the PC.
-	Error occurred	If an error none of the above has occurred on the PC.	Follow the steps with the error message on the PC.

SSMIII revision history

Release	PC Application version	CF Application version	Main revision history	Remarks
Jan. 2005	Ver.1.1.7.10	Ver.1.0.16	Trigger function is added.	
			Analog measurement function is added.	
			Remote box function is added.	
			Data cut-and-save function is added.	
			Display function of cursor numerical value information between two points is added.	
			Setting all clear function is added.	
			Initialization function of sampling item sequence is added.	
			Function to move graph cursor with mouse is added.	
			Marking button is modified.	M key only → Numerical keys, alphabetical keys or symbol keys
			Icon for data list tool bar is added.	
			Function of [<<] button and [>>] button when displaying saved data is modified.	Skips 10 data → Skips 1 page
			Overwriting saved data after making changes becomes possible (e.g. marking is added, sampling items is changed, range is added, comment is added).	
			File extension of saved data is linked to PC application.	
			SDI power OFF function is added.	[MENU] key + [Down] key
			Initialization function is added for language setting in SDI stand alone.	Turning the power ON with C key pressed will return the language setting to English.
			PAK file search software is improved.	
			FlashWrite is improved.	
			PAK is added.	

Release	PC Application version	CF Application version	Main revision history	Remarks
Feb. 2005	Ver.1.1.7.13	Ver.1.0.16	Improvement for forced termination with OBD not to occur is made.	
			SDI auto update becomes possible.	
			Misspelled words for PAK file search software is corrected.	
	Ver.1.1.7.16	Ver.1.0.16	Diagnosis function of 06MY B9 TRIBECA is added.	
			First decimal place is added for psi-unit display.	
			Error in 06MY trouble code is corrected.	
			Release date (month, year) is added for version information.	
Apr. 2005	Ver.1.2.10.9 Ver.1.2.10.10	Ver.1.0.36	Roughness monitor function is added.	
			Keyless ID registration function is added.	
			Keyless ECM customize function is added.	
			Diagnosis of 98MY to 00MY model are added for PC application.	
			Diagnosis of 06MY LEGACY/IMPREZA/FORESTER are added for PC application.	
			Trigger line for trigger function is modified.	
			Line width, line color and range information of graph data can be saved.	
			Data display function is added for SDI stand alone diagnosis.	
			Body integrated ECM customize function is added for SDI stand alone diagnosis.	
			Immobilizer registration function is added for SDI stand alone diagnosis.	

Release	PC Application version	CF Application version	Main revision history	Remarks
Jul. 2005	Ver.1.3.11.12 Ver.1.3.11.13	Ver.1.1.50	ECM Analog simultaneous measurement function is added.	
			Function for converting sampled data to CSV is added.	
			Function to save screen data as BMP file is added.	
			All extensions of sampled data can be displayed.	
			Average speed of each cylinder can be displayed in Roughness Monitor.	
			Immobilizer for 06 MY European specifications is supported for PC application.	
			Diagnosis function of JUSTY is added for PC application.	
			Add function to recover automatically when SDI firmware update is failed.	Update is performed again when selecting system.
			Function to display a note on the SDI screen during SDI firmware update is added.	
			Stand alone function is added for 06 MY vehicles (except immobilizer registration for 06 MY European specifications).	
			HELP file can be displayed in multilanguage.	
Oct. 2005	Ver.1.4.13.11 Ver.1.4.13.12	Ver. 1.2.1	Marking delete function is added.	
			Function to display a list of customized settings for body integrated module is added.	
			Function to save stand alone measurement data is added.	
			Diagnosis of 98MY to 00MY models is supported for stand alone.	
			Immobilizer of 06MY is supported for stand alone.	
			Driving recorder of previous models (98MY or later) is supported. [Engine, AT]	
			ECM Analog Simultaneous Measurement (SDR) is added.	

Release	PC Application version	CF Application version	Main revision history	Remarks
Jan. 2006	Ver. 1.5.17.3 Ver. 1.5.17.4	Ver. 1.2.3	Added toolbar initializing function	
			Improved the function which caused an error that Air-bag Warning Lump turns on while sampling data by AT system	For 06MY LEGACY excluding North America
Apr. 2006	Ver. 1.6.19.3 Ver. 1.6.19.4	Ver. 1.2.7	Supports diagnosis by CAN communication	
			Supports reprogramming by CAN communication	
			Diagnosis support on 07MY vehicles (PC application, stand-alone)	
			Improvement of the self-shutdown function which caused the error that activated the function during the stand-alone sampling.	
			Improvement of the function which caused the error that the DTC of engine does not display on some of 98-99MY vehicles.	
			Improvement of the high-grade roughness monitor function which caused the error after switching the authority from the administrator to the user when sampling. (from Ver. 1.5.17.5)	
			Improvement of the high-grade roughness monitor function which occurred the error when displaying maximum and minimum engine speed. (from Ver. 1.5.17.5)	
			Improvement of the high-grade roughness monitor function which occurred the error caused by the noise.	
			Changed the system compliance verification window of the immobilizer registration function.	
			Added the Notes section to Details on SearchFlashWrite.	
			Changed part of the screen display on the BIU mode and keyless unit mode.	

Release	PC Application version	CF Application version	Main revision history	Remarks
Jul. 2006	Ver1.7.19.13 Ver1.7.19.14	Ver1.2.12	Improvement of the system operation check mode which occurred the communication error. (from Ver. 1.6.19.9)	For fuel pump control mode
			Improvement of the part of DTC different from service manuals on BIU. (from Ver. 1.6.19.9)	For before 06MY LEGACY
			Supports link with service manuals (Excluding North America)	
Oct. 2006	Ver1.8.23.8 Ver1.8.23.9	Ver1.2.15	Saved data multiple display function is added.	
			Improvement of communication on engine system OBD mode occurred an error. (from Ver. 1.7.19.15)	For 98MY and 99MY models
			Improvement of analog sampling communication occurred an error. (from Ver. 1.7.19.15)	For Windows 2000
			Countermeasure for the noise of an engine speed. (Occasionally, the rotation number data instantly goes up and down 60 rpm while sampling an engine speed.)	
			Solved the air-bag warning lump lightning. (It occurred while connecting a select monitor)	For 06MY and 07MY LEGACY
Jan. 2007	Ver1.9.26.13 Ver1.9.26.14	Ver1.2.19	Diagnosis support on 08MY vehicles (PC application, stand-alone)	
			Added the Trigger of input data function for the driving recorder (SDR).	
			Added the Analogue data trigger function for ECM analog simultaneous measurement.	
			Improvement on communication speed of the old communication in the PC application selection mode.	
			Improvement of displaying all data after selecting items for sampling, which occurred an error on the data while stand-alone sampling.	
			Improvement of showing stand-alone sampling data, which occurred an error.	

Release	PC Application version	CF Application version	Main revision history	Remarks
Apr. 2007	Ver1.10.27.18 Ver1.10.27.19	Ver.1.2.22	Diagnosis support on 08MY vehicles (PC application, stand-alone)	
			Addition of a driving recorder function for VDC and ABS.	
			Improvement of a code error on airbag system displayed illegal codes when all DTCs were displayed.	
			Improvement of the system caused an error when it is calibrated by the pressure type occupant detection system. (from Ver 1.9.26.16)	
Jul. 2007	Ver1.11.28.12 Ver1.11.28.13	Ver.1.2.25	Supports diagnosis of 08MY JUSTY (Other than North America)	
			Added Each System DTC Check function (CF application)	
			Added Impact Sensor Sensitivity Adjustment function (CF application)	
			Added Wireless LAN Communication function (Other than North America)	
			Improvement of the driving recorder function caused an abnormal analog sampling value.	
			Improvement of the display for confirming a vehicle type when registering an immobilizer.	From Ver. 1.10.27.20
Oct. 2007	Ver1.12.29.3 Ver1.12.29.4	Ver.1.2.27	Addition of "AT learning mode" and "AT air bleeding mode".	
			Addition of "Compulsory learning mode" and "Injector code registration mode" for Diesel engine.	Excluding North America
Jan. 2008	Ver.1.13.30.3 Ver.1.13.30.4	Ver.1.2.29	Changed the message displayed in the AT learning mode	
			Improved the error that occurred when the ignition switch was turned off at the end of reprogramming	
			Improved the color display variation to 16 kinds in Graph 2	
			Added the TPMS function (stand-alone)	

List of Part Numbers

No.	Part No.	Name	Remarks
1-1	1B022XU0	SSMIII KIT	Without carrying case
1-2	1B023XG0	SSMIII KIT	With carrying case
2	1B061XZ0	SSMIII KIT CARRYING CASE	SSMIII KIT content
3	1B040XZ0	SDI (SUBARU DIAGNOSTIC INTERFACE)	SSMIII KIT content
4	1B050XZ0	DIAGNOSTIC CABLE	SSMIII KIT content
5	1B070XZ0	USB CABLE	SSMIII KIT content
6	1B082XZ0	CF CARD	SSMIII KIT content
7	1B110XZ0	REMOTE BOX	Optional part
8	1B120XZ0	PULSE/ANALOG KIT	Optional part

NOTE:
Part No. of SSMIII KIT differs depending on destination etc. For applicable Part No., contact the dealership in which you purchased SSMIII.