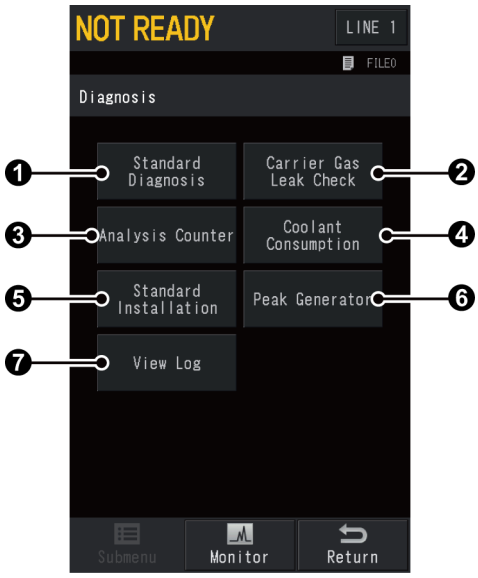
[Diagnosis] Screen

Press (HOME) - [Function] - [Diagnosis] to display [Diagnosis] screen.

On [Diagnosis] screen, you can perform standard diagnosis and check analysis counter.



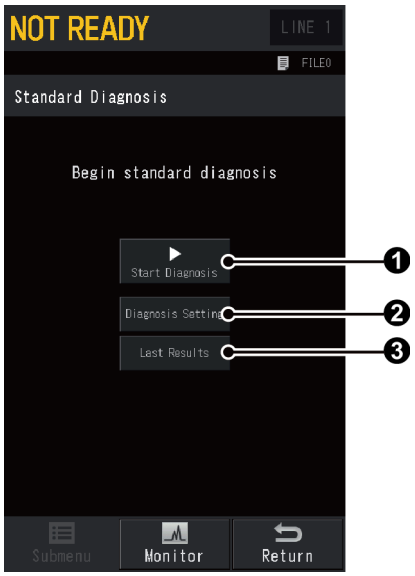
No.	Item	Description	See also
❶	Standard Diagnosis	Displays [Standard Diagnosis] screen.	[Standard Diagnosis] Screen
❷	Carrier Gas Leak Check	Displays [Carrier Gas Leak Check] screen.	[Carrier Gas Leak Check] Screen
❸	Analysis Counter	Displays [Analysis Counter] screen.	[Analysis Counter] Screen
❹	Coolant Consumption	Displays [Coolant Consumption] screen.	[Coolant Consumption] Screen
❺	Standard Installation	Displays [Standard Installation Test] screen.	[Standard Installation Test] Screen
❻	Peak Generator	Displays [Peak Generator] screen.	[Peak Generator] Screen
❼	View Log	Displays [Log Reading Menu] screen.	[Log Reading Menu] Screen

■ [Standard Diagnosis] Screen

Press (HOME) - [Function] - [Diagnosis] - [Standard Diagnosis] to display [Standard Diagnosis] screen.

On the [Standard Diagnosis] screen, you can check the thresholds for each consumable, presence/absence of sensor error, operation of gas flow and operation of over temp protection. Use this

screen to maintain the instrument and diagnose problems.



No.	Item	Description	See also
❶	Start Diagnosis	Press [Start Diagnosis] to start standard diagnosis program. After the diagnosis, test result and number of failures are displayed.	-
❷	Diagnosis Setting	Displays [Diagnosis Setting] screen. Selects diagnosis items and determines setup values used for diagnostic reference.	[Diagnosis Setting] Screen
❸	Last Results	Displays [Diagnosis Report] screen. Displays the result of the last self-diagnosis. **Note** When Standard Diagnosis is not performed after the instrument is turned on, Last Results screen is not displayed.	[Diagnosis Report (Details)] Screen

Cautions when starting the standard diagnosis.

When the standard diagnosis is performed, among the units included in line configuration, the temperature is controlled for the column oven but not for the inlet and detector. Only gas is controlled for the inlet and detector.
Therefore, prepare the instrument for analysis before the standard diagnosis.
(For example, connect the column, supply each gas, and close the oven door)

Since the column temperature increases to 100 °C, when using the column of which maximum temperature is lower than 100 °C, remove the column and seal the column connection of the inlet and detector.

Diagnosis of ignition/illumination operation of the detector

The detector temperature is not controlled during the standard diagnosis, therefore, it is diagnosed by ignition/illumination operation after the instrument is turned on.
When ignition/illumination operation is not performed after the instrument is turned on or ignition operation is not performed after the flame is extinguished, the result of diagnosis becomes [Not Tested].

Diagnosis of carrier gas control/purge flow control

It is diagnosed at set inlet pressure, total flow and purge flow.
The result of diagnosis may become [Fail] when:

- The initial temperature of the column oven is set at a high value
- Split ratio is set at a low value
- Purge flow is set at a high value

When the result of diagnosis becomes [Fail], change each set value and perform the diagnosis again. When the result becomes [Fail] even after changing the set value, contact your Shimadzu sales/service representative.

Diagnosis of over temp protection

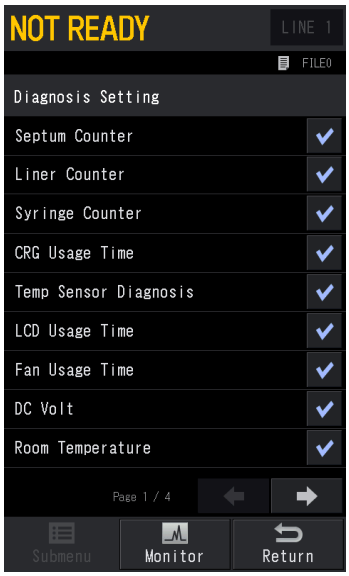
It checks that the over temp protection operates correctly.
During diagnosis, gas control is started for the carrier gas of the inlet included in line configuration and AUX-APC and then the column temperature increases to about 100 °C. It is diagnosed by operating the over temp protection while increasing the temperature and checking that the heater is turned OFF.
Diagnosis is terminated and the result becomes [Note Tested] when:

- The instrument detects that the oven door opens during diagnosis
- An error related to the flow controller occurs during diagnosis
- Diagnosis is started when the column maximum temperature is set lower than 100 °C.

■ [Diagnosis Setting] Screen

Press (HOME) - [Function] - [Diagnosis] - [Standard Diagnosis] - [Diagnosis Setting] to display [Diagnosis Setting] screen.

Diagnosis items can be set on [Diagnosis Setting] screen.



Item	Description
Septum Counter Liner Counter Syringe Counter	Verifies whether the number of usage is below the threshold. The threshold can be set on [Analysis Counter] screen. Reference [Analysis Counter] Screen
CRG Usage Time	Verifies whether the operating time of CRG coolant is below the threshold. The threshold can be set on [Coolant Consumption] screen. Reference • [CRG] Screen • [Coolant Consumption] Screen
Temp Sensor Diagnosis	Verifies whether the temperature sensor operates correctly.
LCD Usage Time	Verifies whether the accumulated back light ON time is below the threshold. The threshold is 46380 hours.

Fan Usage Time	Verifies whether the accumulated fan operating time is below the threshold. The threshold is 61320 hours.
DC Volt	Verifies whether each DC voltage (5 V DC, 24 V DC) is below the threshold.
Room Temperature	Verifies whether the current room temperature is within the operation range. The threshold is 5 °C to 40 °C.
Atmospheric Press	Verifies whether the atmospheric pressure is within the operation range.
Primary Press	Verifies whether the carrier gas supply pressure is within the maximum set pressure.
CPU Register RTC Register	Verifies that each register is correctly written and read.
DET ROM	Verifies that the data saved in the detector ROM is read correctly.
DET ADC Register	Verifies that the data saved in the detector A/D converter register is read correctly.
DET HV Source	Verifies whether the detector high voltage power supply is below the threshold.
DET Ignite/Plasma ON Pulse	Checks that the ignition/plasma ON pulse is normal.
DET Ignition/Plasma ON	Checks that the ignition/plasma ON operation is normal.
ECD Frequency	Verifies whether the frequency of the pulse voltage applied to the ECD is below the threshold.
CAR Gas ROM DET Gas ROM APC ROM Gas Selector ROM	Verifies that the data saved in the flow controller ROM is read correctly.
CAR Gas ADC DET Gas ADC APC ADC Gas Selector ADC	Verifies that the data saved in the flow controller A/D converter is read correctly.
CAR Gas Control Purge Gas Control Makeup Gas Control H2 Gas Control Air Gas Control APC Gas Control Gas Selector Control	Checks that carrier gas, detector gas, AUX-APC, and gas selector are normally controlled.
Over Temp Protection	Ensure that the overheat protection circuit is normal.
ROM	Checks that the ROM is intact.
RAM	Verifies the RAM can be correctly written and read.
SCD Vacuum Pump SCD Ozone Scrubber SCD Inner Pyrotube SCD Outer Pyrotube	Verifies whether the number of usage is below the threshold. The threshold can be set on [SCD Parts Counter] screen. Reference [SCD Parts Counter] Screen

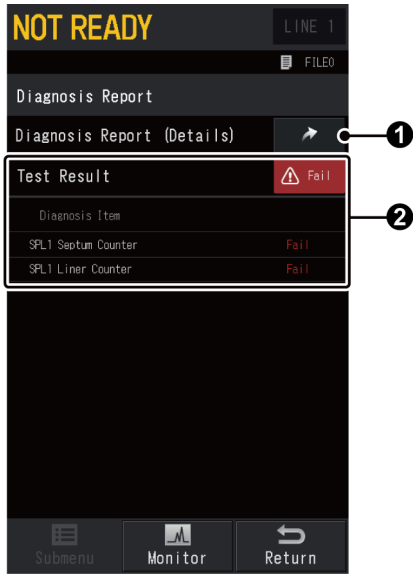
SCD Furnace Temp. Sensor	Verifies whether the furnace temperature sensor operates correctly.
SCD ROM	Verifies that the data saved in the SCD ROM is read correctly.
SCD ADC	Verifies that the data saved in the SCD A/D converter is read correctly.
SCD Flow Control	Checks that SCD detector gas is normally controlled.

■ [Diagnosis Report] Screen

Press (HOME) - [Function] - [Diagnosis] - [Standard Diagnosis] - [Last Results] to display [Diagnosis Report] screen.

You can see the list of items that Test Result and Diagnosis result are "Fail".

[Diagnosis Report] is displayed also when you press [Details] on the screen displayed after the standard diagnosis.

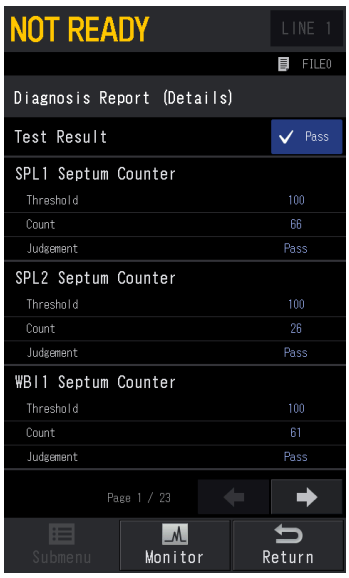


No.	Item	Description	See also
❶	Diagnosis Report (Details)	Displays [Diagnosis Report (Details)] screen. You can see the results of self-diagnosis for each item.	[Diagnosis Report (Details)] Screen
❷	Test Result	You can see the list of items that Test Result and Diagnosis result are "Fail". • Pass : Displayed when the diagnosis result is below the threshold. • Fail : Displayed when the diagnosis result exceeds the threshold. Reference Troubleshooting for [Fail] • Cancel : Displayed when the self-diagnosis was stopped.	-

■ [Diagnosis Report (Details)] Screen

Press (HOME) - [Function] - [Diagnosis] - [Standard Diagnosis] - [Last Results] - [Diagnosis Report (Details)] to display [Diagnosis Report (Details)] screen.

You can see the results of self-diagnosis for each item.



- Test Result

Item	Description
Pass	Displayed when the diagnosis result is below the threshold.
Fail	Displayed when the diagnosis result exceeds the threshold. Reference Troubleshooting for [Fail]
Cancel	Displayed when the self-diagnosis was stopped.

- Detailed Diagnosis Result

Item	Description
Pass	Displayed when the diagnosis result is below the threshold.
Fail	Displayed when the diagnosis result exceeds the threshold. Reference Troubleshooting for [Fail]
Not Tested	Displayed when the self-diagnosis was stopped or when an item is excluded from the test.
Not Applicable	Displayed when diagnostic test is disabled for the unit (ignition test for a TCD, for example).
Not Selected	Displayed when the diagnosis were not performed on the item because it has not been configured in the analytical line. Certain diagnosis items can be performed for components which have not been configured. (Example: Does not check make up gas control, but checks its detector ROM.)
Not Installed	Displayed when the diagnosis item is not installed.

Troubleshooting for [Fail]

Diagnosis Item	Solution
Septum Counter	Replace the septum. Reference Maintenance Help

Liner Counter	Replace the glass insert as needed. Reference Maintenance Help
Syringe Counter	Replace the AOC syringe as needed. Reference Maintenance Help
Room Temperature	Check the operation range.
Atmospheric Press	Check the operation range.
Primary Press	• Adjust supply pressure to the GC (with the regulator of the cylinder). • Replace the cylinder.
DET Ignition	Reference • Cannot Ignite or Flame Is Extinguished (FID) • Cannot Ignite or Flame Is Extinguished (FPD)
Any other item	Contact your Shimadzu sales/service representative.

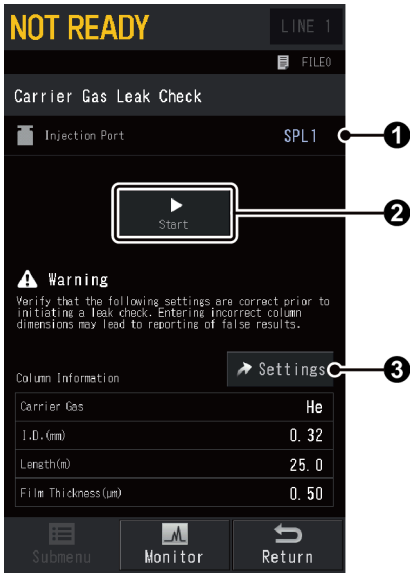
■ [Carrier Gas Leak Check] Screen

Press (HOME) - [Function] - [Diagnosis] - [Carrier Gas Leak Check] to display [Carrier Gas Leak Check] screen.

This function checks the leakage of the carrier gas.

If the previous check result is displayed, press [Clear] to delete it. Press [Retry] to perform the leak check again.

For details of gas leak check, see "Inspection method using the carrier gas leak check function".

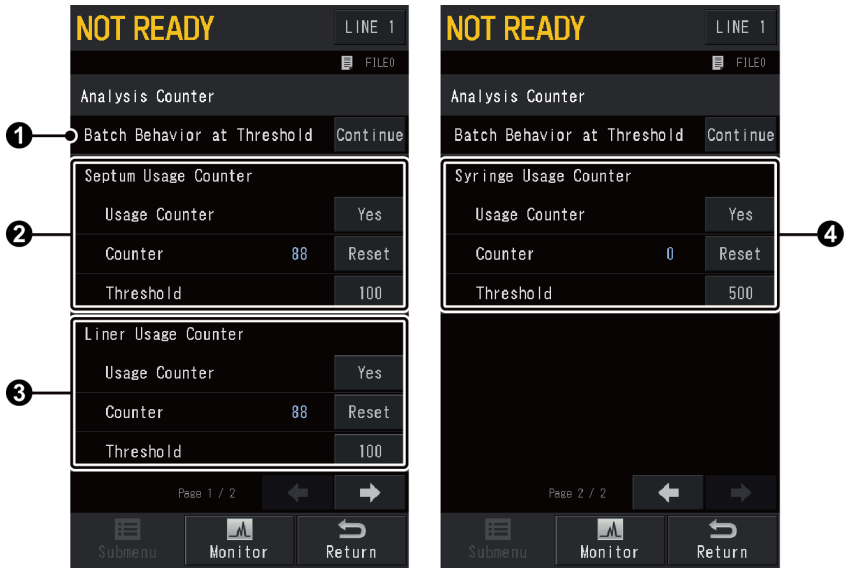


No.	Item	Description
❶	Injection Port	Displays active injection port.
❷	Start	Press [Start] to start carrier gas leak check.
❸	Settings	Displays [Column Information] screen. Reference [Column Information] Screen

■ [Analysis Counter] Screen

Press (HOME) - [Function] - [Diagnosis] - [Analysis Counter] to display [Analysis Counter] screen.

Use the analysis counter to display messages warning you to replace septum, glass insert, and syringe.



No.	Item		Description	
❶	Batch Behavior at Threshold		Sets action to be performed when the number of analysis exceeds the threshold set on [Analysis Counter] screen during batch behavior. When [Continue] is selected, a message saying that the counter exceeds the threshold will appear in the message display, however, the instrument continues batch behavior. When [Stop] is selected, a warning message is displayed and the instrument stops batch behavior.	
			Items	Continue, Stop
			Default	Continue
❷	Septum Usage Counter		Sets the septum counter.	
		Usage Counter	Select [Yes] to display a message in the message display when the number of uses of the septum exceeds the threshold.	
			Items	No, Yes
			Default	Yes
		Counter	Displays the number of uses of the septum. Press [Reset] to reset the count. When [Usage Counter] is set at [Yes] and the counter exceeds the threshold, the displayed color turns red.	
		Threshold	Sets the number of times where you should replace the septum.	
			Range	0 to 9999
			Default	100
❸	Liner Usage Counter		Sets the insert counter.	
		Usage Counter	Select [Yes] to display a message in the message display when the number of uses of the grass insert exceeds the threshold.	
			Items	No, Yes
			Default	Yes

		Counter	Displays the number of uses of the glass insert. Press [Reset] to reset the count. When [Usage Counter] is set at [Yes] and the counter exceeds the threshold, the displayed color turns red.	
		Threshold	Sets the number of times where you should replace the grass insert.	
			Range	0 to 9999
			Default	100
❹	Syringe Usage Counter		Sets the AOC syringe counter. Displayed when AOC is configured in analytical line.	
		Usage Counter	Select [Yes] to display a message in the message display when the number of uses of the AOC syringe exceeds the threshold.	
			Items	No, Yes
			Default	Yes
		Counter	Displays the number of uses of the syringe. Press [Reset] to reset the count. When [Usage Counter] is set at [Yes] and the counter exceeds the threshold, the displayed color turns red.	
		Threshold	Sets the number of times where you should replace the syringe.	
			Range	0 to 9999
			Default	500

Note

- The timing of replacement of septum and grass insert is different depending on the sample and outer diameter of the syringe needle. Check [Counter] and [Threshold] before analysis.
- If a message saying that the counter exceeds the threshold appears, replace the parts immediately.
- Reset the counter after you replace septum, grass insert or AOC syringe.

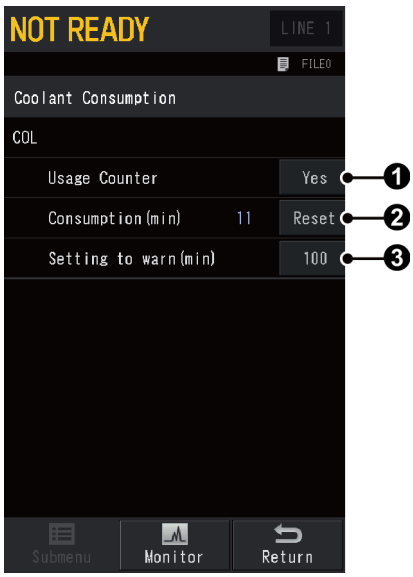
■ [Coolant Consumption] Screen

Press (HOME) - [Function] - [Diagnosis] - [Coolant Consumption] to display [Coolant Consumption] screen.

When using low-temperature oven controller CRG, the instrument monitors total time that [Valve] on [CRG] screen is set at [On], and displays it on [Consumption] on [Coolant Consumption] screen.

[CRG] Screen

When the coolant consumption counter is active and the coolant consumption exceeds the threshold, a warning message is displayed.



No.	Item	Description	
❶	Usage Counter	Select [Yes] to display a message in the message display when the coolant consumption exceeds the threshold.	
		Items	No, Yes
		Default	Yes
❷	Consumption	Displays total time that [Valve] on [CRG] screen is set at [On]. Press [Reset] to reset the count. When [Usage Counter] is set at [Yes] and the consumption exceeds the threshold, the displayed color turns red.	
❸	Setting to warn	Sets the threshold where you should replace the coolant.	
		Range	0 to 9999 min
		Default	100 min

Note

The coolant consumption time depends on the gas cylinder volume and the temperature settings. Set the threshold according to the analysis conditions. Perform analysis and check the actual coolant consumption before you set the threshold.

■ [Standard Installation Test] Screen

Press (HOME) - [Function] - [Diagnosis] - [Standard Installation] to display [Standard Installation Test] screen.

On [Standard Installation Test] screen, you can check whether the instrument operates according to the set conditions after installation.

Test Procedure

1 Press [Initialize Test] on [Standard Installation Test] screen.
[Test] is displayed in the top-right of the screen.

2 Configure an injection port and a detector used for the standard installation test in the same analytical line.

[Line Configuration] Screen

3 Set the column information.

[Column Information] Screen

4 Set analytical conditions.

- Injection Port
- Detector
- [Analysis Settings] Screen

5 Start the GC.

[GC Start Sequence] Screen

6 Inject a sample into the injection port and press START (START).

7 Check whether the instrument performs the analysis according to the set conditions.

8 After the check, press [Unload] on [Standard Installation Test] screen to return the analysis conditions to the original values.

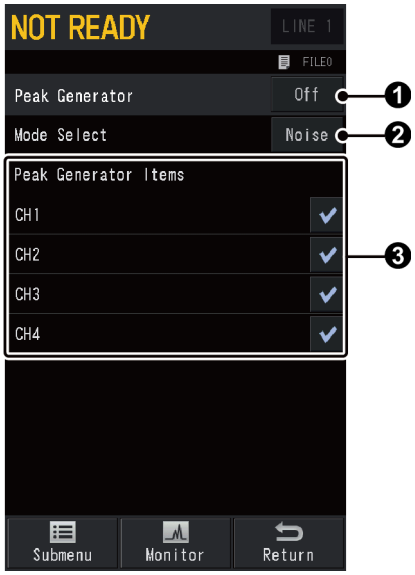
Note

If the instrument does not obtain the data according to the set conditions, contact your Shimadzu sales/service representative.

■ [Peak Generator] Screen

Press ⌂ (HOME) - [Function] - [Diagnosis] - [Peak Generator] to display [Peak Generator] screen.

Use [Peak Generator] screen to generate dummy peaks to confirm the operation of the data processing unit.



No.	Item	Description	
❶	Peak Generator	Select [On] to generate dummy peaks to confirm the operation of the data processing unit.	
		Items	Off, On
		Default	Off
❷	Mode Select	Sets the type of the dummy peak.	
		Items	Noise, No Noise
		Default	Noise
❸	Peak Generator Items	Check the channel which the instrument outputs peaks to.	

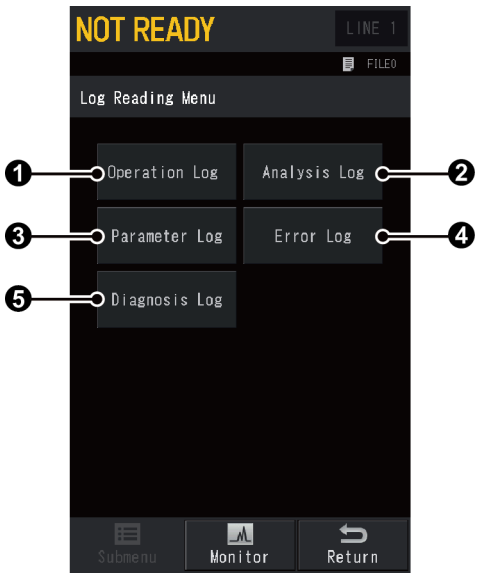
Submenu

Item	Description
Peak Information	Sets parameters of the dummy peaks outputted to the data processing unit (retention time, full width at half height, and peak height).

■ [Log Reading Menu] Screen

Press (HOME) - [Function] - [Diagnosis] - [View Log] to display [Log Reading Menu] screen.

[Log Reading Menu] screen shows logs.



No.	Log type	Description	Max Logs	Note
❶	Operation Log	Displays the Power and GC (System) On/Off log.	50	-
❷	Analysis Log	Displays analysis log. If a parameter goes out of the setting, you can check the parameter.	5 to 525 * Different depending on the log size.	If the program rate (speed) is too high during a temperature program, it may not be controlled as the setting.
❸	Parameter Log	Displays the date of parameter change, and the name and the set value of the parameter. Also displays the log of direct operation such as valve.	50	-
❹	Error Log	Displays all error messages displayed on the screen and their time of occurrence.	100	When only one ignition sequence was re-attempted, it is not recorded in the error log.
❺	Diagnosis Log	Displays the log of standard diagnosis.	50	For detailed result of the last self-diagnosis, see "[Diagnosis Report (Details)] Screen".

Press [Clear Log] to delete the log.