

OPERATION MANUAL

SMARTASSIST-Direct

YANMAR

OPERATION MANUAL

SMARTASSIST-Direct

YANMAR

0AYSA-EN0018 30.3(YTSK)

YANMAR CO., LTD. https://www.yanmar.com

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0AYSA-EN0018 CODE OPERATION

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1. Overview

The SMARTASSIST-Direct software supports the error diagnosis, and mounting and maintenance services of electrical control devices. It runs on Windows personal computers.

2. Operation Environment of SMARTASSIST-Direct

The service tool operates in the below environment.

- PC
 - CPU: Intel Pentium 4 2 GHz or more recommended
 HDD: 200 MB or more recommended ^{*1}
 OS/Memory: Windows Vista
 - Widows 7 32bit/64bit (recommended)

Widows 8 (recommended)

Widows 8.1 (recommended)

• Display resolution: 1024 x 768 or higher

- USB 1.1: 1 port
- Microsoft Excel 2000 or higher (for the display of operation data)
- Internet Explorer 8.0 or higher (for the manual link)
- ^{*1} Does not included memory for data storage.

• Interface Box (YANMAR Diagnosis Interface Box)

1R1999-25000 (HITACHI interface box)

1RF002-25000 (YANMAR interface box)

• Display Language of SMARTASSIST-Direct

- Japanese
- English
- Chinese

Note If SMARTASSIST-Direct software is not installed normally, consult with the YANMAR Service Department.

If you install to an OS without appropriate operating environment, the message below will be show and you cannot use smartASSIST-Direct.



* Anti-virus software may affect the installation of SMARTASSIST-Direct software.

3. Contents of SMARTASSIST-Direct

3.1 Contents of the Program

Software

The engine ECU (hereafter ECU), the 3G controller (hereafter ECU) and the drivers connect to the PC via the interface box (a signal converter) ([Figure 3-1 Connection to the product]). The software performs error diagnosis, writing of software, and initial settings.

Training Mode

In this mode, you can practice how to use SMARTASSIST-Direct on your PC without connecting to the ECU. The operation of the software and the ECU are simulated using data that is stored on the PC in advance.

Displaying measurement data and product operation data

• All data collected during maintenance can be displayed with the provided software.

- The data can be compared to other data of the same kind.
- All collected data can be displayed on other SMARTASSIST-Direct workstations.

Communication with the Center

The software uses the Internet to download required data and updates, and to upload collected data.

Detail Settings

The settings allow to change the data rate to the ECU and other conditions. It is also possible to select the training mode and confirm software updates.

As a basic rule, do not change the communication settings unless instructed to do so by YANMAR.



Figure 3-1 Connection to the product

3.2 Function Mode

Three settings for the usable functions are available, depending on the service level.

Standard Mode

Basic error diagnosis function is available.

Advanced Mode

Basic error diagnosis, ECU writing and electrical part replacement functions are available.

Expert Mode

All functions are available.

O: Usable X: Not usable

	Туре	Standard	Advanced	Expert
Utilization limitation	All models per product category are available	0	0	0
License Management	License Update	0	0	0
Error Diagnosis		0	0	0
ECU Writing/Replacement		×	0	0
Parts Replacement/Adjustment		×	0	0
Customization		×	×	0
Product Operation Data (Display)		×	×	0
Data Management IP/EP		×	0	0
Training		0	0	0
Campaign		×	0	0
ECU Maintenance Data Upload		×	0	0
Product Operation Data		0	0	0
Service data	Manual link	×	0	0
Software update		0	0	0

* The detailed function may be different depending on the content of the license in the same function mode.

3.3 Updating SMARTASSIST-Direct

The SMARTASSIST-Direct service tool updates automatically.

Connect the PC to the Internet, launch the service tool and login. It communicates automatically with the center, receives the setup files, and performs the update.

Note If you activate the Internet connection AFTER starting the service tool, it will not update.



Figure 3-2 Refresh schema

After an automatic update, the login screen is displayed again after the process screen is shown. This is not a malfunction. Simply enter your user ID and password again to login. **1** Enter your user ID and password to login.

Serial No	0000990	6	
UserID			
Password			
	Login	Exit	

2 Update message is displayed. Click "OK".

🛕 To update Lastversion		
	OK Cancel	

3 After an auto update, the below screen is displayed for a couple of seconds.



3.4 License Security Check

To ensure that you always use the latest version of the software, a security check of the license is conducted at the center. Software management is necessary because some functions may influence engine performance.

• Security Check Period

The security check period is three months after the last communication with the center.

Security Check Period Warning

One month before the security check period expires, a warning is displayed each time the service tool is started to remind of the end of the security check period.

Exceeding the Security Check Period

If the security check period has exceeded and the service tool has not been used for an extended period of time, the usage period is extended for a grace period of 7 days.

After the grace period, the system switches to default mode and its functions become unavailable. Connecting to the center will make it serviceable again. (The security check period is extended by 3 months when connecting to the center.)



Y: Usage permitted days after the security check expiration detection (7 days)



Figure 3-3 Security check period schema



Figure 3-4 Before Incident Warning Screen



Figure 3-5 Screen After Exceeding Limit

Remark \bullet The security check is performed for each PC.

• If one PC is used by multiple users and one user connects the PC to the center, the last connection date is updated.

Not all users need to connect to the center





Figure 3-6 Example screen for security check refresh

3.5 License Expiration Date

The license is generally valid for one year, from January 1 to December 31.

If a security check was conducted, but the license period is exceeded, it is not possible to connect to the center. Please confirm with YANMAR whether to extend the license period before it expires.



3.6 Maintenance Information for the ECU, Driver, Pump and Other Parts

In the earlier YDT system, it was necessary to formally register information that was written to the ECU or similar parts to YGSM.

SMARTASSIST-Direct automatically uploads to the center all data that was written or deleted, making it unnecessary to register the data separately.





- Important To make sure that the data is sent and registered, start SMARTASSIST-Direct with an active Internet connection soon after maintenance is finished.
 - The writing process can be canceled from the software's menu. (It is necessary to send cancellation/deletion data to the center.)

3.7 Software Serial Number and the License

YANMAR produces a wide range of products. To be able to conduct proper maintenance after appropriate training for the product, licenses are issued separately for each product category. (Same as YDT)

The product category-specific license information is affiliated with the software serial number. (License serial number)

Multiple product category-specific licenses can be affiliated to the same serial number

The standard mode license (with basic error diagnosis functions) and the expert mode license (with rewrite functions of the ECU and similar parts) are operated by separate software serial numbers.



Figure 3-9 Serial number and user schema

The SMARTASSIST-Direct installed on the PC has an individual software serial number and can only be used by users registered for that serial number.

Example 1: User #4 cannot loginto the PC with serial number 3 using his ID and password.

Example 2: User #1 is registered as user for the PCs with serial number 1 and 2 that have the same company code, and can loginto both PCs with his ID and password.

Example 3: User #1 cannot be registered for the PC with serial number 3 that has a different company code.

3.8 Software Serial Number and the User ID

Under SMARTASSIST-Direct, the users per PC are limited for reasons of safety and security.

- After the software installation is complete, the software connects to the center and activates. SMARTASSIST-Direct then confirms the serial number based on the information registered at the center in advance during the application.
- This serial number and user ID is affiliated with the registration information. Other SMARTASSIST-Direct users who are not affiliated cannot use the system.

Point The initialization (user verification) is performed for each user ID. After the installation is completed, each user should loginto SMARTASSIST-Direct with an active Internet connection. (The initialization is performed automatically.)



3.9 User ID and Password

The SMARTASSIST-Direct user ID and password are the same as for YANMAR D SITE (YDS).

• If You Forget Your User ID or Password

It is necessary to reassign a user ID and password within the YDS system through the YDS operation tool. For details, consult with a representative of the business unit or your sales agent.

- **Important** It is a rule within YDS to change the password on a regular basis.
 - Depending on the usage condition, it is possible that the SMARTASSIST-Direct password and the YDS password are different the first time that you use SMARTASSIST-Direct after a password change.
 - When using the system with an active Internet connection Enter the new password
 - When using the system without an active Internet connection
 - Enter the old password

(This is because the new password has not yet been sent to the PC from the center.)

Point The YDS password change is reflected on the SMARTASSIST-Direct server in approx. 1 minute.

Start SMARTASSIST-Direct right after the change and login to the system and the PC password is also changed.

(This method requires some extra effort, but it is the most reliable method.)



Note Because YANMAR employees use the same ID and password as for the "My Portal" system, they need to exercise the same care after a password change as when using YDS.

4. Start, Stop and Finish Procedures

4.1 Operation Procedures

4.1.1 SMARTASSIST-Direct Connection

- **1** Plug the USB cable into the USB port of the PC and the USB port of the interface box.
- 2 Plug the diagnostic cable into CN1 (D-SUB 9P male end) of the interface box.
- **3** Plug the diagnostic cable into the service connector.

The interface box is powered by the device. Be careful: using a defective cable or short-circuiting the cable connector terminal is very dangerous.

The correct way to connect the cables is: Plug the connector cable into the interface box. Connect the interface box with the USB cable to the PC.

It is not possible to do the connection without the interface box (e.g. by plugging the connector cable directly into the PC or using a serial USB conversion cable). Always use the supplied interface box when using SMARTASSIST-Direct.



4.1.2 Power Supply

Except when using in training mode, it is necessary to turn on the power of the connection destination or the ECU (ignition key or power switch) before starting SMARTASSIST-Direct.

4.1.3 USB-Driver Installation

USB Driver 1 of the Interface Box

Insert the interface box with the power on ^{Note)} to the USB port of your computer. The driver will be installed automatically. (The example screen is for Windows 7.)



Note The interface box is supplied with power (for example, connected to the product with the key switch turned on).

USB Driver 2 of the Interface Box

Depending on the version of Windows, the setup wizard may launch.Follow the instructions on the screen to install the driver. (The example screen is for Windows 7.)



4.1.4 I/F BOX LineUP

	I/F BOX (Old type)	I/F BOX	
External Dimensions	W:98mm L:77mm D:25mm	W:90mm L:77mm D:25mm	
Communication	• CAN communication (ISO 11989 compliant):1ch	• CAN communication (ISO 11989 compliant):2ch	
Functions	• USB communication (USB 1.1 compliant):1ch	USB communication (USB 1.1 compliant):1ch	
	 Driver Installation is required 	 Applicable to Windows standard HID driver 	
Power Supply	DC12V (From in-vehicle battery)	DC5V (From USB port of PC)	
Connector	The connector harness of the new-type I/F box is compatible with that of the conventional-type		
Harness	I/F box.		
LED Lamp	N/A	While being connected to PC: Lit	
		While ECU is communicating: Flashing	

Note I/F boxes (Old type) are no longer newly manufactured.



4.1.5 How to Confirm the Terminal Information of the New-type I/F Box

You can confirm the terminal information of the I/F box from the terminal information in SMARTASSIST-Direct (Refer to page 18 and 395 to check the terminal information.)

Note Communicating with the ECU is required to display the terminal information.

Terminal Information			
SMARTASSIST-Direct(Market)			OK
Version 2.6.2-W Release T02.04.02			
Copyright(C) YANMA	R Co.,Ltd. 201	1	
Version Information Pr	oduct Categor	y Add	Functic
Module/Table	Version	Ň.	
ISO14229 Module	2.6.2.0		
ISO14230 Module	2.6.2.0		
J1939 Module	2.6.2.0		
Resource Module	2.6.2.0		
SharedMemory Module	2.6.2.0		
Interface Box Firmware	Y00.06.000		
Interface Box DLL	Y00.05.008		E.
Interface Box API	02.02		
Interface Box SerialNo	1522300075		-

4.1.6 Login Screen

How to Login

Double-click the icon (

) that was created during installation.

The SMARTASSIST-Direct logo appears, then the login screen is displayed.

SA-Dire

WARTASSIST Login version 2.0.9	SMARTASSIST Login version 2.0.9
Serial No 0000000 UserID Password Login Exit [Verify Server]version 2.0.9.0	Serial No 0000000 UserID Password Login Exit [Offline]version 2.0.9.0
Internet connection active	Internet connection inactive
SMARTA	SSIST ct

• If the usage license is invalid or the initialization is not complete (because the software could not connect to the center directly after installation), the below warning is displayed.



• The user ID and password are the same as those for the YANMAR D SITE (YDS). If the YDS password has changed, refer to [3.9 User ID and Password] on page 10 for details.

Entering the User ID and Password

The Login Screen is displayed.

- **User ID** : Enter the user ID.
- **2 Password** : Enter the password for this user ID.

Check the above, and click the **Login** button.

	SMARTASSIST Login version 2.6.3	1	SMARTASSIST Login version 2.6.3
	Serial No 0000000		Serial No 0000000
1—	UserID	0—	UserID
2	Password	2	Password
3	Login Exit	3	Login Exit
	[Verify Server]version 2.6.3.0		[Offline]version 2.6.3.0
	Internet connection active		Internet connection inactive

Note If you enter your user ID or password incorrectly, the following warning appears.



4.1.7 Start Menu

After login, the Start Menu is displayed.

- **1** : It is possible to change the display language. (Japanese/English/Chinese as of December 2015)
- **2** : Select the product category that you wish to use.
- 3 : Exit the software.

SMARTASSIST-Direct	Terminal Information / Job Edit Language : English
AGRICULTURE	





SMARTASSIST-Direct	
SMARTASSIST Direct	Terminal Information / Job Edit Language : English
AGRICULTURE	Exit TANMAR DIAGNOSTIC TOOL

Terminal Information confirmation

Click the "Terminal Information" and you can confirm the Terminal Information. (Refer to page 395)

SMARTASSIST-Direct	Terminal Information / Job Edit Terminal Information Language : English Upload Cancel
AGRICULTURE	

Upload cancellation

Cancel the data when the uploaded ECU exchange information is repeatedly displayed due to the software fault.

* This function is normally not used.

SMARTASSIST-Direct		
SMARTASSIST Direct	Terminal Information / Job Edit Terminal Language : English Upload C	Information
AGRICULTURE	Exit VANMAR DIAGNOSTIC TOOL	

5 : The selected category turns red. Select the model.



The available models are listed below. (September 2012)

Agriculture	Tractor
	Combine
	Rice-Transplanter
	Speed Sprayer
	Multi Purpose Truck
Marine/Ocean	Marine Gear
	Marine Engine
	Large Engine
Energy System	Generator
Construction	Construction
INDUSTRIAL ENGINE	Engine

Note The categories and models increase with time.

4.1.8 Main Menu

All functions of SMARTASSIST-Direct are displayed sorted in categories depending on the work situation.

ECU Access

Operations that are performed with the ECU (controller) connected

- 2 Data Management
 - Operations that can be performed without the ECU (controller) connected
- 3 Database Access

Related data is collected voluntarily (via a connection to the center)

Advanced Settings/Additional Settings

Settings and additional functions related to system operations (including training mode)

5 Job Assistant

Guide function to perform a series of operations

- 6 Selection button for all functions. Functions that are not shown in red are unavailable.
- An explanation for all functions is displayed.
- 8 The product category or model selected in the start menu and the available function mode is displayed.
- **1** It is displayed whether a connection to the center or Internet is active.

Online: Connected

Offline: Not connected

Note To change from offline to online status, it is necessary to exit the software, restart it, and login. Being connected with a LAN cable alone is not sufficient to change to the online status.



1 ECU Access

Operations that are performed with the ECU (controller) connected

SMARTASSIST-Direct	
File(<u>F</u>) View(<u>V</u>) Tool(<u>T</u>) Help(<u>H</u>)	d)
🔝 Main Menu 🖪 🗣 📼	
MenuToolBar & ×	
ECU Access	
Diagnostics (Execution)	Coperations that are performed when communicating with ECO2
Product Operation Data (Acquisition)	The communication connection to the center is included and a necessary function is not included.
ECU Reprogramming (Flash)	
Set Value Copy	
Component Replacement (Execution)	Corrections, data and adjustments used during maintenance or error diagnostics>>
Get option ECU information	View data from the ECU, save ECU data and perform operational tests and adjustment.
Performance inspection (Agri)	
Data Management	
Database Access	
Advanced Settings/Additional Settings	
Job Assistant	Comment #×
AGRICULTURE / Tractor / Expert	ONLINE

Diagnostic (Execution)	Operations, adjustments and repairs	View the measurement data and save data of the	Defecto
	during error Diagnostic	ECU, and perform an operational test, adjust-	Relef to
		ments and repairs.	page 40
Product Operation Data	Collecting and saving product op-	View all saved product operation data of the ECU,	Refer to
(Acquisition)	eration data	and do a comparative analysis with past data.	page 207
ECU Reprogramming	ECU software writing	Performed in case of ECU exchange or software	Defer to
(Flash)		updates. First, it is necessary to download the	Relef to
		software with the ECU disconnected.	page 225
Set Value Copy	Copying the settings during ECU	Reading and writing setting values and correc-	Defende
	exchange	tion values for ECU exchange. It is necessary to	Refer to
		write the software to the new ECU in advance.	page 239
FIE Replacement	Rewriting correction values	Rewrite correction values for the pump, injector	Refer to
(Execution)		and other parts.	page 265
Get option ECU	The work when option ECU isin-	SA-D gets the information of option ECU and	
information	stalled	machine information.	-
Function Diag Test	Check function of maintenance	For quality maintenance of machine with ECU.	-

2 Data Management

Operations that can be performed without the ECU (controller) connected

SMARTASSIST-Direct		x
File(<u>F</u>) View(<u>V</u>) Tool(<u>T</u>)	Help(<u>H</u>)	
🔝 Main Menu 🖪 🔹 📼		
MenuToolBar 🛛 🖉 ×		
ECU Access Data Management	<operations be="" can="" connected="" ecu="" performed="" that="" the="" without=""></operations>	1
Diagnostic Data (Display)	The communication connection to the center is included and a necessary function is included.	8
Product Operation Data (Display)		
ECU Soft Download		
Trim Data Download		
Manual Search	< <viewing data="" ecu="" saved="" the="">></viewing>	=
Saved Data		
Exchange Information Management	View and compare the saved data of ECU in the diagnostics, start screen Data that has been collected at other workstations must be imported from the Data Management menu using "Sav Data"	/e
Database Access		
Advanced Settings/Additional Se		
Job Assistant	<u> </u>	
	Comment	8 ×
< III >>		
AGRICULTURE / Tractor /	Expert ONLI	NE

Diagnostic Data (Display)	Viewing the saved error diag-	View and compare the saved data of the ECU in the error	
	nostic data	diagnostic start screen. Data that has been collected at	Refer to
		other workstations must be imported from the Data Man-	page 154
		agement menu.	
Product Operation Data	View saved product operation	View and compare the saved data of the ECU in the prod-	Refer to
(Display)	data	uct operation data screen.	page 215
ECU Soft Download	ECU Software Download	Performed in case of ECU exchange or software updates.	Pefer to
		When writing to the ECU, it is necessary to do so with the	nogo 227
		ECU connected.	page 227
Trim Data Download	Downloading the correction	Download the pump correction values. The correction value	Refer to
	values for electrical parts	of the injector for repair is not available for download.	page 266
Manual Find	Searching and Viewing Techni-	Search for downloaded manuals or manuals on external	Refer to
	cal Manuals	media.	page 185
Saved Data	Managing data on the worksta-	Import, export and delete data, and edit memos about data	Pefer to
	tion	saved on the workstation (e.g. ECU write data, error diag-	
		nostic data, and product operation data)	paye 304
Exchange Information	Manually upload data on re-	Manually upload to the management server data regarding	Defer to
Management	placed electrical parts	completion and cancellation of electrical parts replacement	
		and software updates	page 338

3 Database Access

Related data is collected voluntarily (via a connection to the center)

SMARTASSIST-Direct		. D . X
File(<u>F</u>) View(<u>V</u>) Tool(<u>T</u>) Help(<u>H</u>	<u>(</u>)	
🔊 Main Menu 🗗 🕈 📼		
MenuToolBar &×		
ECU Access		Ī
Data Management	< Additional data that can be downloaded from the server>	
Database Access	Indispensable data to the program operation is received automatically.	
Troubleshooting Manual Download		
Product Operation Data		
System Information.		
Advanced Settings/Additional Settings		
Job Assistant		
	< <search and="" download="" manual="" troubleshooting="">></search>	
	Search and download data used in the manual link.	
Comment MenuToolBar		
INDUSTRIAL ENGINE / Engine /	Expert	ONLINE

Troubleshooting Manual	Search and download troubleshooting	Search and download data used in the	Refer to
Download	manual	manual link.	page 190
Product Operation Data	Search and download product operation	Search and download product operation	
	data by model and machine number	data saved in th database.	
System Information	Download information on SMARTASSIST-	To download the latest inforamtion about	
	Direct	the system.	

Advanced Settings/Additional Settings

Settings and additional functions related to system operations (including training mode)

SMARTASSIST-Direct	
File(F) View(V) Tool(T) Help(H	1)
🔊 Main Menu 🗇 🔹 📼	
MenuToolBar # ×	
ECU Access Data Management	<operation for="" guide="" operations="" sequential=""></operation>
Database Access Advanced Settings/Additional Settings	Please select each tag menu when you do an individual operation.
Communication Settings	
Terminal Information	
Manual Deletion	< <sequential and="" campaigns="" for="" operation="" recalls="">></sequential>
JODASSIStant	A necessary model confirmation and the results management of the explanation recall and the campaign are done.
	Comment # ×
AGRICULTURE / Tractor / Expert	ONLINE

Communication set-	Edit the settings for communicating	Normally, it is not necessary to change the settings.	Refer to
tings	with the ECU		page 390
Terminal information	View all settings of the workstation	It is possible to confirm the usage license, software version, and updated information on supported models.	Refer to page 395
Manual Deletion	Deleting data for the manual link	Delete obsolete data for the manual link.	Refer to
			page 197

5 Job Assistant

Guide function to perform a series of operations

SMARTASSIST-Direct	
$File(\underline{F})$ $View(\underline{V})$ $Tool(\underline{T})$ $Help(\underline{F})$	1)
🔊 Main Menu 🗗 🖶 📼	
MenuToolBar & ×	
ECU Access	
Data Management	<operation for="" guide="" operations="" sequential=""></operation>
Database Access	Please select each tag menu when you do an individual operation.
Advanced Settings/Additional Settings	
Job Assistant	
ECU Replacement	
FIE Replacement	
Service Campaign	
lob List	
JOD LISI	< <sequential ecu="" exchange="" for="" operation="">></sequential>
	It exchanges, and it tries the download of the ECU software and writing.
Commont MonuToolPer	
INDUSTRIAL ENGINE / Engine / I	Expert ONLINE

ECU Replacement	Sequential operation for ECU ex-	It exchanges, and it tries the download of the ECU soft-	
	change	ware and writing.	
FIE Replacement	Sequential operation for electric	The download of the correction values such as pumps and	
	part exchange	injectors, rewriting, and the confirmation driving are done.	
Service Campaign	Sequential operation for cam-	A necessary model cofirmation and the results manage-	
	paigns and recalls	ment of the explanation recall and the campaign are done.	
Job List	Order and edit job list	Delete or save old items when the execution speed slows	
		down.	

4.2 Stop Procedure

Click icon 🚺 📰 to disconnect from the ECU without exiting the program. After the adjustments of the product are complete, click icon 😰 🔂 to continue monitoring.

П. П. C.	
i SMARTASSIST-Dired	
File(F) View(\] Operation(O) Tool(T) Help(H)	
Diagnostics 🗃 🖢 Con LINE Active Code	
MenuToolBar ø×	
News	
ECU Information	
Diagnostic Codes	
Freeze Frame Data	
Diagnostic Tests	
Data Logging	
Historical Data	
ECU Structures	
System Settings	
Comment	×
Baudrate : 500k Type:4TNV94HT-ZXSRA / SNo:00117	E

2		
SMARTASSIST-)irect		
File(<u>E</u>) Vi v(<u>V</u>) Operation(<u>O</u>) Tool(<u>I)</u> Help(<u>H</u>)	
🔝 🔝 Diagnostics 🗐 🖶 ┥ OFF L	NE Active Code	
MenuToolBar **		
News	v	
ECU Information		
Diagnostic Codes		
Freeze Frame Data		
Diagnostic Tests		
Data Logging		
Historical Data		
ECU Structures		
System Settings		
	Comment	₽×
Baudrate :Type:4TNV98-ZXXX / S	No:54321	ONLINE
4.3 Finish Procedure

SMARTASSIST-Direct can be exited in the same way as other Windows applications. When disconnecting the interface box, do so after exiting the SMARTASSIST-Direct software.

- **1** X or "File (F)" "Exit (X)": A confirmation message is displayed to exit the program.
- **2** Yes : Click to exit the program.



3 Exit : Click this to exit from the Start Menu.

Terminal Information / Job Edit Language : English
Exit

4.4 Troubleshooting

If communication with the ECU is faulty and normal monitoring is not possible, check the below points and restart SMARTASSIST-Direct.

If the communication cable disconnects or the power supply to the ECU/product is interrupted during data transmission, the system may not operate normally even after a restart. In that case, turn off the power (with the key switch) or, if that is not possible, disconnect the interface box from the product's service connector and reconnect it. The interface box will reset and operations will return to normal.

- Are all cables connected? Are all cables in good condition?
- Does the product have power?
- Is the system not in training mode?
- Is the system connected?

For details on the warning messages, refer to [19. Error Screen and Warning Screen] on page 398.

5. Screen Functions

5.1 Basic Screen

● Tool Bar		
1 Standard Tool bar	:	On the standard tool bar that allow basic operations 2 to 4, you can press
		ALT and the bracketed letter as a shortcut.
2 Operation Tool Bar	:	On all screens, the available operations are shown on a tool bar, and only
		the necessary function icons are displayed.
3 Function Selection Tool Bar	:	The view is equivalent to the standard tool bar where standard functions
		are selected.
4 Screen Display Tool Bar	:	Expand and minimize the function selection tool bar and display mes-
		sages and warnings.
5 Subfunction Selection Tool	:	A subfunction button is displayed within each function. Also, if the prod-
Bar		uct has a multi-ECU, the communication destination controller can be
		switched.
Display Box		
6 Main Box	:	Displayed depending on the selected function.
Additional Information Box	:	Used as a special display on graph screens and time series data screens.
8 Comment Box	:	Usually, the current error status is displayed. The error criteria and error
		diagnosis results are displayed in the screen that shows the error code.
9 Status Box	:	Displays the current communication status.

• Function Buttons

10 The function buttons that are not on the standard tool bar (e.g. the clear button) are in the main box or the additional information box.



Figure 5-1 Basic Screen

5.1.1 Standard Tool Bar

Tool bar to select the functions, screens, operations and tools. Select by clicking. When a menu is displayed, you can press ALT and the bracketed letter behind a menu entry as a shortcut.



	File (F)
	ECU Data Save (E)
	Screen Print (P)
	Screen Image Save (B)
	Start Manu (S)
	Main Menu (M)
	Exit (X)
1	View (V)
ľ	News (N)
	News Link (N)
	ECU Information (I)
	Summary Information (I)
	Diagnostic Codes (F)
	Active DTC (A)
	Logged DTC (L)
	DTC Information List (I)
	Freeze Frame Data (R)
	Recorded Data (S)
	Trend Graph (T)
	Diagnostic Tests (D)
	Pulse/Analog etc (A)
	Digital IN etc (I)
	Digital OUT (O)
	Active Control (D)
	Active Control (Graph) (G)
	Hysteresis Measure (H)
	Data Logging (L)
	Data Monitor (M)
	Recorded Data (S)
	Trend Graph (T)
	Historical Data (H)
	Lifetime Data (L)
	Map Table (M)
	Log Data (G)

Vie	ew ((V)
	EC	CU Structures (E)
		Analog Channels (A)
		Digital Channels (E)
		ECU ID Information (D)
		ECU Data Save (S)
	Sy	stem Settings (S)
		Configuration (C)
		Calibration (A)
		Tuning (T)
		Initial Settings (I)
	Ma	anual Search (M)
Or	era	tion (\mathbf{O})
	Co	nnect (Z)
	Dis	sconnect (X)
То	ol (Τ)
	To	ol Bar (T)
		Menu Tool Bar (M)
		Comment Tool Bar (C)
	Sta	atus Bar (S)
	Co	mmunication Setting (C)
	Op	tion (O)
	Fo	nt Size Setting (F)
		Large (L)
		Middle (M)
		Small (S)
He	p_(H)
	Ve	rsion Information (V)
	Co	ntrol Manual (M)
	115	B Driver Instal method (I)

5.1.2 Operation Tool Bar

On all screens, the available operations are shown on a tool bar, and you can operate them by clicking them. Unavailable operations are displayed in a darker color.

	SMARTASSIST-Direct
	File(<u>F</u>) View(<u>V</u>) Operation(<u>O</u>) Tool(<u>T</u>) Help(<u>H</u>)
→	
	Diagnostics 🗇 🖶 TRAINING Active Code

	ECU Data Save	B	Screen Print (Ctrl+P)		Save image
	File Save (Ctrl+S)		Save measured data	C	Refresh
27	Auto Refresh		Start		Stop
-	Option Set	Se	Trigger Set	34	Sample Rate Set
	Data Set	Σ	Graph Top Set		Graph Bottom Set
Param Set	Parameter Set		Connect	└ 二 業	Disconnect
Sus	Return Start Menu	SE .	Return Main Menu		

5.1.3 Function Selection Tool Bar

• Tool bar to select the functions of the service tool. Select a menu by clicking it. The view is equivalent to the stan-

dard tool bar.

Name	Description
News	Displayed when relevant news data for the connected product is available.
ECU Information	Displays main system information of the ECU or controller.
Diagnostic Codes	Displays current or past defects detected by the ECU or controller.
Freeze Frame Data	Displays relevant data before/after a recent error was detected (expert function).
Diagnostic Tests	Separately checks the input/output tools. The input/output test has a active control function.
Data Logging	Diagnoses faults and analyses the operating conditions while the engine operates.
Historical Data	Displays the operating condition stored in the ECU.
ECU Structures	Displays ECU and controller data and input/output layout information (expert function).
System Settings	Necessary when performing initial settings and repair, and adjustments such as ECU or controller replacement.

• Operation tool available in all menus

0 0 0 - - - - - - - 0 0 0 0 0 0 0 - - - - - - - 0 0 0 0 0 0 0 - - - - - - - 0 0 0 0 0 0 0 - - - - - - 0 0 0 0 0 0 - - - - - - - 0 0 0
I Channels 0 0 0 -

*1: ECU Access: ECU Data Save

Data Management: ECU Data Read

*2: Cannot disconnect during active control and when receiving logged data

Display of the Function Selection Tool bar





33



Clicking will separate the function tool bar, and it can be moved to an arbitrary place.



Double-click the menu tool bar to return.

5.1.4 Comment Box

The display of the Comment can be changed in the same way as the function selection tool bar.

1 : Push to Hide button to hide the Comment box.



To display the Comment box again, go to the standard tool bar and click Tool (T), Tool bar (T), and CommentTool bar (C).

SMARTASSIST-Direct			
File(<u>E</u>) View(<u>V</u>) Operation(<u>O</u>)	Tool(<u>T</u>) Help(<u>H</u>)		
	Tool Bar(T)	MenuToolBar(M)	
🔊 🔝 Diagnostics 🖪 🔹 🗖	 StatusBar(S) Communication Setting(C) 	CommentToolBar(C)	
MenuToolBar	Option(O)		
News	Font Size Setting(F)		
ECU Information			



The size of the Comment box is adjustable. (Operate by drag-and-drop.)

5.1.5 Changing the Display Border Width

The display border width of the display box and all selection screens is adjustable.

MenuToolBar	# ×	Information - Su	mmary Information			🔶 Drag	g the lir
News CU Information Summary Information Diagnostic Codes	初其	System Group]設定値	Detail 傾斜センサ 微調整ポリューム 初期設定済みフラ	Value	0.000	Unit V	E
			\bigcirc				
MenuToolBar News	€× ECU	Information - Su	mmary Information				
MenuToolBar News ECU Information	∉× ECU	Information - Su System Group	mmary Information Detail	Value	Unit		
MenuToolBar News ECU Information Summary Information	e × ECU 初期	Information - Su System Group 設定値	mmary Information Detail 傾射センサ 研究的は、1000	Value 0.000	Unit		Ĩ

Drag & drop the mark

ict C	Model	Serial No	Date	Time	Туре	ECU Na
Eng	4TNV88C-ZXXX		31 May,2016	14:57:30	ECU	Engine
Eng	4TNV94HT-ZXXX		31 May,2016	14:57:21	ECU	Engine
Eng	4TNV98-ZXXX		31 May,2016	14:56:56	ECU	Engine



Product Group	Model	Serial No	Date	Time	Тур
Engine	4TNV88C-ZXXX		31 May,2016	14:57:30	ECU
Engine	4TNV94HT-ZXXX		31 May,2016	14:57:21	ECU
Engine	4TNV98-ZXXX		31 May,2016	14:56:56	ECU

5.1.6 Screen Display Tool Bar

1	: Return to the Main Menu
2	: Display box for the selected function
3 🗗	: Show the Function Selection Tool Bar again
4	: Expand submenus of the Function Selection Tool Bar
5	: Minimize submenus of the Function Selection Tool Bar
6 Display	of ECU/controller communication status ON LINE: CONTINE TRAINING etc.
7 Display	of current errors: Active Code
	2 3 4 5 6 7 SMA tTASSIST-Dir ect File(E) View (V) Ope rat on(O) Tool(I) Help(H) File(E) View (V) Ope rat on(O) Tool(I) Help(H) Diagnostics TRAINING Active Code

6. Error Diagnostic Function (ECU Access)

6.1 Starting the Error Diagnostic

- 1 Connect the product and the PC with the interface box.
- 2 Turn on the product. (Turn the key switch to "On".)
- **3** Select the tab "ECU Access".
- **4** Select the button "Diagnostic (Execution)".

SMARTASSIST-Direct	
File(E) View(V) Tool(I) Help(E)	<u>1</u>)
🔊 Main Menu 🖪 🖶 📼	
MenuToolBar & ×	
ECU Access Diagnostics (Execution)	<operations are="" communicating="" ecu="" performed="" that="" when="" with=""> The communication connection to the center is included and a necessary.</operations>
Product Operation Data (Acquisition)	function is not included.
ECU Reprogramming (Flash)	
Set Value Copy	
Component Replacement (Execution)	
Customization (Execution)	<-Operations, data and adjustments used during maintenance or error
Get option ECU information	diagnostics>>
Data Management Database Access	View data from the ECU, save ECU data and perform operational tests and adjustment.
Advanced Settings/Additional Settings Job Assistant	
Comment MenuToolBar	
INDUSTRIAL ENGINE / Engine /	Expert ONLINE

5 The following screen is displayed.



6 Connect to ECU. Then turn on the power and click OK. "ECU Find" screen is displayed.



When the communication speed is inappropriate

Cancel

-

500k

("Start" button is not available)

ECU Application 00:Engine

Start

Change the communication speed between 500k and 250k, then select

© 250k

BECU Access

Data Rate

ECU Search

7 When ECU Search is complete, either one of the following screens is displayed.

When the communication speed is appropriate

ST ECU Access		
Data Rate	© 250k	◎ 500k
ECU Applicatio	on 00:Engin	e •
St	art	Cancel

Go to 8.

"ECU Search" button. Secu Access - - X BECU Access Data Rate @ 250k o 500k Data Rate 250k © 500k Function Select Engine • ECU Application 00:Engine • ECU Search Start Cancel Start Cancel "Start" button is now available. Go to 8.

When the communication speed is inappropriate



If the screen goes back to 1 and let you do the same operation repeatedly, ECU may be faulty.

6. Error Diagnostic Function (ECU Access)

- **8** When the search of the product's internal ECU is finished, the selection screen for the connection destination is displayed. Select connection destination **2**, and click "Start".
 - **1** Normally this is automatically set by a part that adjusts the data rate and cannot be changed.
 - Select the connection destination. Normally, the parts in the product's internal ECU that can be connected to are displayed.
 - 3 Search the ECU again.
 - 4 Activate the connection.
 - 5 Cancel the connection.
 - The display method can be changed to "Ecu Mode" and "Func Mode". (Refer to [9 Display Func Mode] on page 43.)

	🎓 ECU Access	
0	>Data Rate	
	ECU Application 00:Engine	- 2
3	ECU Search	
4	Start Cancel	5
	🛊 ECU Access	
	Data Rate © 250k	
	Function Select Engine	
	ECU Search © Ecu Mode © Func Mode	6
	Start Cancel	

For industrial engines (land-use), the Function Select window displays "Engine" only for Tier4 CR and older engines. However, for Final Tier4 engine (with ATD unit), it indicates "Engine" and "SCR" as shown below.

ECU Access		× • •
Data Rate	@ 250k	© 500k
Function Select	Engine Engine	
ECU Search	SCR Ecu Mo	de 🔹 Func Mode
Sta	rt	Cancel

9 Display Func Mode

To improve the product's functionality, a multi-ECU type has been developed that allows the control of one function on multiple ECU. In that case, select the display method "Func Mode" to view the necessary data filtered from multiple ECU.

Example: Transmission control, UFO control

- If the search cannot be conducted because the power is turned off, the power supply is unstable, a cable is not connected or other reasons, an ECU list is displayed on the selection screen of 2 that suggests connection destinations from the product category selected on the start menu. If the search is not successful, changing the data rate becomes available. For marine use, the standard is 250 kB; for land use, agricultural and construction equipment, the standard is 500 kB. The Baud rate can vary depending on the machine model. Select the data rate and the ECU application, and click "Start".
 - The ECU application of the model selected at the Start Menu is displayed as selection destination.

ST ECU Access			
Data Rate	© 250k	⊚ 500k	
ECU Application	00:Engine 00:Engine		•
ECU Search	Ecu Mode	•	◎ Func Mode
Start			Cancel

 If connected to a service ECU (new ECU), refer to [12 Connecting to the service ECU] on page 46. **10** The communication with the ECU or controller starts.



Note If communication fails and an error screen is displayed, refer to [19. Error Screen and Warning Screen] on page 398.

- 11 Data Selection Screen for the Manual Link Function
 - (1) When the connection to the product is established, the product model is confirmed and the manual link data for error diagnosis is automatically set. If multiple data sets are available, the data selection screen is displayed. Select the desired data, and click "OK".

ing]	2
Language	
Japanese	
Japanese	
	Ing] Language Japanese Japanese

Example screen

Note If only one manual link data set is available, the screens described in (1) are not displayed and the data is set automatically.

- ② If the manual link data is of a different language than the language set for the operating system, the below notice screen is displayed, asking for confirmation.
- Selection window for different languages
- 2 If confirmed
- If not confirmed



Note When the manual display language setting and the language set for the PC's operating system are different, the manual display language setting is prioritized.

12 Connecting to the service ECU

When an Diagnostic (Execution) is performed at the service ECU (new ECU), displays and functions are different between the engine ECU and the implement 3G controller.

• Engine ECU

1 The search results for "Data Rate" and "ECU Application" of the connected service ECU are displayed.

When starting the connection, a warning is displayed stating that the connected ECU is not a marketed product.

3 The error diagnostic screen for the service ECU is displayed.

$File(\underline{E})$ $View(\underline{V})$ $Tool(\underline{I})$ $Help(\underline{H})$			
Main Menu 🗇 🔹 🖻 OFF LINE			
MenuToolBar			
Diagnostics (Execution)	th communicating with the	ECU (controller)>	
Product Operation Data The communication c	onnection to the center is	included and a	
(Acquisition) necessary function is	not included.		
$\mathbf{\hat{\Gamma}}$			
ECU Access	ECI	J Access	
Data Rate © 250k	Dat	a Rate 🔹 250k 💿 500k	
	or		
ECU Application 00:Engine	EC	J Application 00:Engine	•
[COULON WATCH]			
ECO Search	E	JU Search	
Start Cance		Start	Cancel
\bar{V}			
SMARTASSIST-Direct ECUs other than a mass-production art	cle are connected.		
SMARTASSIST-Direct ECUs other than a mass-production art	cle are connected.		
SMARTASSIST-Direct ECUs other than a mass-production art	cle are connected.		
SMARTASSIST-Direct ECUs other than a mass-production art SMARTASSIST-Direct File(F) View(V) Operation(O) Tool(T) Help(H)	cle are connected.		
SMARTASSIST-Direct ECUs other than a mass-production art SMARTASSIST-Direct File(F) View(V) Operation(O) Tool(T) Help(H) Comparison (C) Tool(T) Help(H)	Cle are connected.		
SMARTASSIST-Direct ECUs other than a mass-production art SMARTASSIST-Direct File(F) View(V) Operation(O) Tool(T) Help(H) Contemposities Diagnostics ON LINE Active Code	Cle are connected.		
SMARTASSIST-Direct ECUs other than a mass-production art ECUs other than a mass-production art SMARTASSIST-Direct File(F) View(V) Operation(O) Tool(T) Help(H) Contemporation (C) Tool(T) Help(H) C) Help(H) C) Help(H) C) Help(H) C) Help(H) C) Help(H) C) Help(H) C) Help(H)	Cle are connected.		

• Implement 3G Controller (ECU)

- **1** The implement 3G controller (ECU) cannot be connected with the diagnostic (execution) function.
- If you click "Diagnostic (Execution)", the data rate will not automatically be set. (selectable)
- If you set the "Data Rate" or the "ECU Application" manually, a warning screen is displayed, and the "Diagnostic (Execution)" function ends automatically.

Data Rate 250k	500k
ECU Application 03:Transmis	sion Control
ECU Search	



6.2 ECU Information

6.2.1 Display

Displays summary information of the ECU.

Operation Tool Bar

1 🗐 : Save the ECU's screen display data. (Refer to [7. Error Diagnostic Data Save and Display Functions].)

- Print the screen.
- 3 🔚 : Save a screenshot in BMP format.
- 4 📄 : Save the screen data in CSV format.
- 5 C : Refresh data.

Main Box

6

- : If multiple ECU are installed, you can switch between screens.
- **System Group** : Show the display categories.
- B Detail : Show the names of the categories.
- **9 Value** : Show data.
- **Unit** : Display the unit.
- **ECU** : Show the name of the ECU or controller whose data is saved.

Comment Box

12 Comment box: Show annotations.



Figure 6-1 ECU Information

When you select the final Tier4 compliant engine "4TNV94FHT" from "INDUSTRIAL ENGINE" in the start menu, two types of ECU are available for engine and SCR. The screen display can be switched between those two types as indicated below. When you select "Engine", the "ECU" of the summary information is indicated as "Engine".

SMARTASSIST-Direct			1			- 0 - X
File(F) View(V) Operation(O)	Tool(T) Help(H	H)				
🖪 🗛 🖻 C 🔡 🔀						
🔊 🔝 Diagnostics 🖪 🔹 🗖	ON LINE Active	Code				
MenuToolBar & ×	Engine			ormation - Summa	ary Int	formation
ECU Information	Engine		100 111		11-14	FOU
	SCR			value	Unit	ECU
Summary Information	Engine into	Engine Type		41NV94FH1-N		Engine
Diagnostic Codes		Engine S/N		000101		Engine
		Engine Type(Vehicle Manufact	ture)	4TNV94FHT-N		Engine
Freeze Frame Data		Engine S/N(Vehicle Manufactu	ure)	CH4M31H000		Engine
Diagnostic Tests		Rated engine speed		2500.00	r/min	Engine
Data Logging		System Supplier		YANMAR		Engine
Historical Data		ECU Category		2	-	Engine
		Qcode		MHA00000		Engine
ECU Structures		FIP System ID		CR_TNV		Engine
System Settings		Total Engine hours		0.00	h	Engine
		Number Of Engine Run Times		0	-	Engine
		Manufacturing Tester ID		VAA300 1		Engine
		Manufacturing Test Date		160517		Engine
	Injector Info	Injector P/N		129F01-53050		Engine
	Rail Info	Rail P/N		129978-57000		Engine
	Pump Info	Pump P/N		129978-51000		Engine
	DPF Info	DPF P/N		129F01-16000		Engine
Comment MenuToolBar	DOC Info	DOC P/N		129F01-16200		Engine
Baudrate : 250k Engine Type(Ve	hicle Manufactu	ure):4TNV94FHT-NJSL / Engine	S/N:00	0101		ONLINE

When switching to SCR ECU (=DCU), select SCR, and then click "Yes".

ect	×
to SCR f	unction?
Yes	No
	to SCR f

The SCR ECU (=DCU) of summary information is displayed. The "ECU" of the summary information is indicated as "SCR".

SMARTASSIST-Direct							
$File(\underline{F})$ $View(\underline{V})$ $Operation(\underline{O})$	Tool(<u>T</u>) Help(<u>H</u>	1)					
🔊 🔊 Diagnostics 🗃 🖢 📼 ON LINE Active Code							
MenuToolBar ♂×	SCR	- ECU Int	formation - Summa	y Information			
ECU Information	System Group	Detail	Value	Unit ECU			
Summary Information	Engine Info	Engine Type	4TNV94FHT-N	SCR			
Diagnostic Codes		Engine S/N	000101	SCR			
		Engine Type(Vehicle Manufacture)	4TNV94FHT-N	SCR			
Freeze Frame Data		Engine S/N(Vehicle Manufacture)	CH4M31H000	SCR			
Diagnostic Tests		System Supplier	YANMAR	SCR			
Data Logging		DCU Category	2	- SCR			
Historical Data		Total Engine hours	0.00	h SCR			
		Number Of Engine Run Times	0	- SCR			
ECU Structures	SCR Info	SCR P/N	129F01-19000	SCR			
System Settings	NOx Senso	SCR NOx sensor1 P/N	129F01-19800	SCR			
		SCR NOx sensor2 P/N	129F01-19800	SCR			
	DM Info	Dosing Module P/N	129F01-19590	SCR			
	SM Info	Supply Module P/N	129F01-19500	SCR			
	ECU Info	DCU Type P/N	129F33-75500	SCR			
		Service Tool Version	0FBBB007	SCR			
Comment MenuToolBar							
audrate : 250k Engine Type(Ve	hicle Manufactu	re):4TNV94FHT-NJSL / Engine S/N:0	000101	ONLIN			

6.2.2 Screen Print

Click the \fbox button of $\ref{eq:linear}$ to open the printer settings screen.

Select an available printer and print.

r nintea			
Name:	Microsoft XPS Document Writer	•	Properties
Status:	Ready		
Type:	Microsoft XPS Document Writer		
Where:	XPSPort:		
Comment	2		
Paper		Orientation	1
Size:	Letter		O Portrait
Source:	Automatically Select	A	Landscape
Source:	Automatically Select	A	Landscape

Figure 6-2 Example screen for Windows 7

6.2.3 Saving images

Click the 🔚 button of 3 to open the selection screen.

, LIG	oraries + Documents +	Search Documents	
Organize 👻 Ne	w folder		₩ •
ጵ Favorites 📃 Desktop	Documents library Includes: 2 locations	Arrange by:	Folder 🔻
Downloads	Name	Date modified	Туре
Recent Places	No items n	natch your search.	
😂 Libraries			
Ma Finance			
Computer			
Northes Computer Main ローカルディ	20(
、Computer 盤ローカルディ	スク(
Network	スク(・		
 Computer ローカルディ Network File name: 	スク(・		
Economies Computer Market 「ローカルティ Network File <u>n</u> ame: Save as type:	スク(・ * * Bitmap Files (*.bmp)		

Figure 6-3 Example screen for Windows 7

6.2.4 File Save

Click the 📄 button of 🖪 to open the selection screen for the save location.

You can write a memo and attach it to the save data.



Data 1	
4	Þ
OK	Cancel

Remark The data is saved as Comma Separated Values (CSV).

When saving data such as the data below with 📄 button of **4**,

Engine		 ECU Information - 	Summ	ary Information
System Group	Detail	Value	Unit	ECU
Engine	Туре	4TNV94HT-ZXSRA		Engine
	Rated RPM	2200.00	r/min	Engine
	SNo	00117		Engine
	Manufacturing Test Date	110121		Engine
	Run Hr	0.00	h	Engine
Pump	Pump Learning Completion Time	0.00	h	Engine
ECU	Part No.	129978-75520		Engine
	SNo.	9960900888		Engine



it is saved in the below format.

			-	
4TNV98-ZXXX	54321	Data 1		Memo displayed here.
Information Type	Detail	Data	Unit	
Engine data	Туре	4TNV98-ZXXX		
Engine data	Rated Speed	2000	r/min	
Engine data	SNo.	54321		
Engine data	Shipment Ad-	80520		
	justment Day			
Engine data	Operating	1300	h	
	Hours			
Pump Data	Туре	2GECO_MP_TNV		
Pump Data	Part No.	729938-51XXX		
Pump Data	SNo.	080528Z321		
ECU Data	Part No.	1R1992-00XXX* *		
ECU Data	SNo.	852754321		

6.3 Diagnostic Codes

Displays current or past defects detected by the ECU. Click the Screen Selection tool bar to display Current Defect or the defect history. Has a manual link function that links to more detailed technical information.

6.3.1 Active DTC

This function lists the current or past defects detected by the ECU in real-time (auto update every 2 seconds). It displays the error code and its contents, and provides a simple explanation and solution in the box on the bottom. If the cause of the defect is removed and the machine works normally again, the Defect Display on the top disappears.

Operation Tool Bar

I : Save the ECU's screen display data. (Refer to [7. Error Diagnostic Data Save and Display Functions].)

- 2 🔁 : Print the screen. (Refer to [6.2.2])
- 3 🔚 : Save a screenshot in BMP format. (Refer to [6.2.3])
- 4 🔚 : Save the screen data in CSV format. (Refer to [6.2.4])

Main Box

5	Manual] : In entries that have this button	Display	, pressing it displays r	more detai l ed	technical infor-
		mation.				

- **Code** : Display error codes (DTC) that conform to SAE J2012 or that have been specified for the product.
- **FMI** : Display the error code. (Refer to [20. Attached Documents] on page 420.)
- **Description** : Display the contents of the error code.
- **Probable Cause** : Display the reason for the error determination.

ECU : Display the ECU of the faulty device. (Only if multiple ECU are connected.)

Comment Box

10

11 Comment box: Display the contents of the error diagnostic for the selected error (line colored in green).

1 2 3 4		5	6		8	<u> </u>	9	
e(F) View(V) Operation(Q) Tool (C St In In In St	(I) Help(H		/	/ /	/ /			/
Diagnostics 3 + TRAIN	ING ALL	Code	/	/ /	/		/	/
muToolBar **	/	/	/	/			/	/
News	ECU				Diagn	ostic Codes - Active DTC	1	
ECU Information	Manual	Code	FMI	Description		Probable	cause	ECU.
Diagnostic Codes		P0217	0	Engine Coolant Temperature	: Too High	(1)Engine overheating, (3	2)Shortage of engin	Engine
Active DTC		P1242	4	Cold Start Device : Circuit	ault A	(1)Poor connection of the	e connector, (2)"Col	Engine
Looped DTC		33		スタアたパセンサ異常		発行支援ショイマルの電圧値 ステアルノザセンサの電圧値	/0.2V来请 #F/は4	Meter
OTC information List		35		リマカバーセンサ異常		リヤカパーセンサの電圧値が	0.5V来清. または4.8	UFO Con
DTC momation List	-							
Freeze Frame Data								
Diagnostic Tests								
Data Logging								
Historical Data								
ECU Structures								
System Settings								
-	transa							

Figure 6-4 Active DTC Screen

6.3.2 Logged DTC

Displays the stored past defect history, error code, error content, number of occurrences, and time of first and latest occurrence. Also, delete the complete defect history or single entries.

Operation Tool Bar

1 [] : Save the ECU's screen display data. (Refer to [7. Error Diagnostic Data Save and Display Functions].)

- 2 🔁 : Print the screen. (Refer to [6.2.2])
- 3 🔚 : Save a screenshot in BMP format. (Refer to [6.2.3])
- Image: Save the complete historical data in CSV format. (Refer to [6.2.4])
- **5 C** : Refresh the complete historical data.

• Function Buttons

- 6 Clear Logged DTC : Select data in the Clear box and delete it.
- All Clear : Delete the complete defect history. Past data are deleted, but Current Defect will still be displayed.

Main Box

8	Clear] : Display the data selected for deletion. (Click to tick the checkbox.)
9	Active] : Current defect are marked with a lamp symbol.
10	Code] : Display error codes (DTC) that conform to SAE J2012 or that have been specified for the
		product.
11	FMI] : Display the error mode. (Refer to [20. Attached Documents] on page 420.)
12	Description] : Display the contents of the error code.
13	00] : Display the total number of occurrences for the same defect.
14	First] : Display the time (machine operation) of the first occurrence.
15	Latest] : Display the time (machine operation) of the last occurrence.
16	ECU] : Display the ECU of the faulty device. (Only if multiple ECU are connected.)

Comment Box

17 Comment box: Display the reason for the error determination for the selected error (line colored in green).

通信 に お 第		7 /	/ /	/	/	/	/		/
Diagnostics 🖪 🔹 📩	TRAINING AC	-		/	/ /	/ /	/		/
olBar	••/	/	///	/	/ /	/	/		
News	ALECU	+ /		/		/-	Diagnost	c Codes - Logged DTC	
ECU Information	Citer Log	ged DTC	All Clear						
Diagnostic Codes	Ciear	Active	Code	FMI	Jescription	OC .	First	Latest ECU	
A CONTRACTOR		0	P0217	0	Engine	3	57.70	1300.00 Engine	
Acove DTC	1		P1242	4	Cold St	4	34.00	1300.00 Engine	
Logged DTC	0	0	P1202	.4	Engine	5	40.00	630.00 Engine	
TC Information List	0	0	P0118	3	Engine	1	122.75	122.75 Engine	
			33		無段度	3	400.00	1300.00 Transmission Con	trol
Freeze Frame Data	0	0	79		走行系	1	604.00	604.00 Transmission Con	trol
Diagnostic Tests		0	32		主レパニ	- 4	30.00	359.00 Transmission Con	trol
Data Looning	0	0	62		QU1-++	2	70.00	80.00 Transmission Con	trol
the second second			32		ステアリ			1300.00 Meter	/
Historical Data			52		水温包			217.00 Meter	
ECU Structures			62		燃料ゼ		1.0	200.00 Meter	
System Settings			35		945515	2	500.00	1300.00 UFO Control	1
	0	0	34		以7下角	1	217.00	217.00 UFO Control	
		-			Shiples .		24.00	140.00 000 0000	

Figure 6-5 Logged DTC Screen

6.3.3 DTC Information List

Displays the list of Error Codes that can be detected by the ECU.

Also, do a keyword search.

Operation Tool Bar

- 🚺 🗐 : Save the ECU's screen display data. (Refer to [7. Error Diagnostic Data Save and Display Functions].)
- 2 🔁 : Print the screen. (Refer to [6.2.2])
- 3 🔚 : Save a screenshot in BMP format. (Refer to [6.2.3])
- 4 📄 : Save the complete historical data in CSV format. (Refer to [6.2.4])

Function Buttons

- **5** Description Search : Enter the keyword for the search.
- 6 Search : Perform the search.

Main Box

7	Code	Display error codes (DTC) that conform to SAE J2012 or that have been specified for the
		product.
8	FMI	Display the error mode.
9	Description	Display the contents of the error code.
10	SPN	Display parameter ID numbers that comply to SAE J1939, and numbers for the sensors
		and actuators
11	ECU	Display the ECU that controls the devices. (Only if multiple ECU are connected.)

Note The displayed contents can vary by product.

• Comment Box

22 Comment box: Display details of the error code for the selected line (colored in green).

legt) pley(V) Operation(Q)	Tool(1) Help(1)							
Diagnostics	TRAINING Active	China	/	_ / _ /		/	/	/ /
nuToolBar	# P		/			/	/	
Maure	Diagnostic Co	des - DTC	Information List		/			1
News	Description	Learnin /			/			Saarch
ECU Information	Descriptions	Pearon P		*	-	-		orearen
Diagnostic Codes	Code	E MA	Des	cription	SPN		ECU	
Active DTC	P0217	0	Engine Coolant Tempe	rature : Too High	110	Engine	/	
Picone Dire	P0219	0	Engine speed : Over s	peed Condition	190	Engine	/	
Logged DTC	P0222	4	Accelerator Pedal Pos	ition Sensor "B" Short.	. 29	Engine	/	
DTC Information List	P0223	3	Accelerator Pedal Pos	ition Sensor "B" : Short.	. 29	Engine	/	
Energ Erame Data	P0224	2	Accelerator Pedal Pos	ition Sensor "B" : Inter.,	. 29	Engine	/	
The state of the state of the state	P0340	-	Engine Fuel Injection I	Pump Speed Sensor : S.	1078	Engine	/	-
Diagnostic Tests	P0562	1	System Voltage 1 Too	Low	158	Engine	/	
Data Logging	P0563	0	System Voltage : 100	High	158	Engine	/	
Historical Data	P0601	12	E-ECU internal fault : I	EEPROM ReadWrite fau	ft 630	Engine		-
The second second	P0605	12	E-ECU internal fault : I	FlashROM Check Sum	. 628	Engine	/	
ECU Structures	P0634	0	E-ECU Internal Tempe	rature : Too High	1136	Engine	_/	
System Settings	P0642	4	Sensor 5V : Shorted b	o low source	1079	Engine	/	
	P0643	3	Sensor 5V : Shorted b	o high source	1079	Engine	/	
	P0668	4	E-ECU Internal Tempe	rature Sensor : Shorte	1136	Engine	/	
	P0069	3	E-ECU Internal Tempe	rature Sensor : Shorte	1136	Engine		
	P0686	4	E-ECU Main Relay : S	horted to low source	1485	Engine		
	P1101	0	Air Cleaner : Mechanic	cal Malfunction	522323	Engine		
	Comment					/		
	a statistical a					- ₩		17.5
	Action : Check the ci generated a	onnector, v gain.	vire-hamess, Engine Co	olant Temperature Senso	r. Power-o	ff for a few t	times. Then check if DTC	code is
	1000							

Figure 6-6 DTC Information List Screen

6.4 Freeze Frame Data

Displays relevant data before/after a recent error was detected, and click the screen selection tool bar to view a list of the data and a transition graph.

Note • The kind of data that is stored during an error is set in the factory. It cannot be set later.

• Depending on the product specification, data before/after error or only before error is saved.

6.4.1 Recoded Data

Additional Information Box

The saved data is displayed in a list. Click a box to display the data in the main box.

No. : Display the line number of the data.

DTC : Error code (The content can be confirmed at "Diagnostic Codes" - "Logged DTC".)

Time : Display the time of error occurrence (total operating time).

Operation Tool Bar

3

- 🖪 🔃 : Save the ECU's screen display data. (Refer to [7. Error Diagnostic Data Save and Display Functions].)
- 5 🔁 : Print the screen. (Refer to [6.2.2])
- 6 1 Save a screenshot in BMP format. (Refer to [6.2.3])
- Image: Save the data displayed in the main box in CSV format. (Refer to [6.2.4])
- 8 💽 : Refresh the data.
- 🗵 🔚 : Display the data selection subwindow to add, delete and sort the displayed data.
- Function Buttons
 - 10 CLEAR FFD : Delete the selected data. (The Password Entry Screen is displayed.)
 - * FFD: Freeze Frame Data
- Main Box

11 ______ : If multiple ECU are installed, you can switch between screens.

12 No. : Display the time line number of the data.

Item Box : The first letter of the selected data name is displayed, and the name is displayed at 12. (Content such as the unit can be confirmed on the ECU Specification/Structure [Analog Channels] Menu screen.) Right-click the Item box to switch the data format from binary to decimal to hexadecimal.

4 5 6 7 8 9		8	10 1	2 3
MenuToolBar **				/ /
News	Engine	- Freeze Frame Data -	Recorded Data	
ECU Information	No. Time		CLEAR FFD	+
Diagnostic Codes			No. DTC	Time ECU
Freeze Frame Data			1 P0219 2 P1222	30.00 Engine 60.00 Engine
Recorded Data			3 P1212	90.00 Engine
Trend Graph				
Diagnostic Tests				
Data Logging				
Historical Data				
ECU Structures				
System Settings				

Figure 6-7 Freeze Frame Data Screen

Select the data displayed in the main box.

: List all available data.

Data Select Window

1 Data

2	◀ / ►	: Select/deselect data for displa	у.				
3	Set data	: The data displayed in the main	n box	κ.			
4	▲ / ▼	: Change the order in which the	sele	ected data i	s displa	yed.	
5	Default	:Previously selected main Item	s are	e set autom	atically.		
6	Set	:Confirm an entry.					
7	Cancel	:Discard an entry.					
		1		2		3	
	🎓 Data Selec	t /		/			
	No 🗸	Description		Description	CID Ac	ronym ECl	J Name
	1	ENGINE RUN HOURS(unit:h)	Þ				
	2	REQUEST ENGINE SPEED					
	3	REQUEST ENGINE SPEED(FINAL)					
	4	ENGINE SPEED					
	5	ENGINE LOAD RATE(Gross)					
	6	ACTUAL EGR VALVE CONTROL VALUI					
	7	Total injection quantity					
	8	ENGINE COOLANT TEMPERATURE					
	9	ECU TEMPERATURE					
	10	BATTERY VOLTAGE					
	11	Engine Start State Status					
	12	DROOP MODE SW					
	13	RMAX SELECT SW1	6				
	14	EMERGENCY STOP SW					
	15	RMAX SELECT SW2	1		Defau	It Set	Cancel
					1		
			7				
			/				
		4			5	6	7

Figure 6-8 Data Select Window Screen

Point If an ECU connection error occurs during data saving due to disconnection, data before the error occurrence is saved.

6.4.2 Trend Graph

Additional Information Box

With the graph setting operation, display the name of the selected data Item and the position of the cursor.

Graph 1 shows top values, graph 2 shows bottom values.

1 Position : Numeric value for the cursor position

2 Display Item and data: Display the Item name and data. The background color and the line color are of the same color.

• Operation Tool Bar

- 🕄 📠 : Save the ECU's screen display data. (Refer to [7. Error Diagnostic Data Save and Display Functions].)
- 4 🔚 : Print the screen. (Refer to [6.2.2])
- 5 🔚 : Save a screenshot in BMP format. (Refer to [6.2.3])
- 6 🔄 : Do the settings for the display Item and the scaling of the top graph.
- 🛛 🤜 : Do the settings for the display Item and the scaling of the bottom graph.

Main Box

8 Cursor position : Click the screen to change the position.

9 Reduce : Contract the graph.

10 *1 : Set the expansion value.

Expand ____ : Expand the graph. 11

2 Counter value : Display the counter value of the y-axis.

Graph 1 and graph 2 are displayed. For details regarding operation of the graph, refer to [7.1 Error Diagnostic Data Save and Display Functions] on page 154.



Figure 6-9 Transition Graph Screen

6.5 Diagnostic Tests

Allows to separately test the input/output device. Select the input/output test and the active control function by clicking them on the screen selection tool bar. Operation within this function that involve output may be usable only with the clutch in neutral and the engine in low idle or stopped.

- The test involves many operations where the product actually operates.
 Only personnel who have taken the SMARTASSIST-Direct training may perform the test, and must pay due attention to their surroundings.
 If not, the product may move unexpectedly and cause serious accidents.
- Important
- In an emergency, turn off the power of the ECU/controller (turn the key switch to "Off") to stop the product.
- "Maintain the previous status" or "Automatically controlled test Return to previous status" are operations in case that the diagnostic tests is canceled under the below conditions, but which one is set varies by product.
 - The buttons "Abort, "Stop" or "Cancel" were clicked.
 - The connection harness between the product and the PC is disconnected.
 - The SMARTASSIST-Direct software was exited.

Important Reset

• Turn off the power of the ECU/controller after the diagnostic tests is finished. (Turn the key switch to "Off".)

Put the product in active control with the SMARTASSIST-Direct, and the ECU/controller will change to force operation mode. If you continue using the device in this state, the automatic control will become unoperational.

6.5.1 Pulse/Analog etc

The analog measuring values and pulse input values can be confirmed with this function when checking operations of the input device after error diagnosis or repair. When switching screens, the screen display automatically refresh every 2 seconds.

Operation Tool Bar

- 🚺 进 : Save the ECU's screen display data. (Refer to [7. Error Diagnostic Data Save and Display Functions].)
- 2 🔁 : Print the screen. (Refer to [6.2.2])
- 3 🔚 : Save a screenshot in BMP format. (Refer to [6.2.3])
- Image: Save the complete historical data in CSV format.
- 5 C: Refresh the current data.
- 6 💭 : Continuously refresh the current data. (2 second interval)
- **7 a** : Stop continuous refresh.
- B Im : After stopping, change the order of the data. With this operation, important data can be sorted in way that is easier to see. For operation details, refer to [Data Select Window] on page 56.

Main Box

9

: If multiple ECU are installed	, you can switch between screens.
-	•

10	Description	: Display the input device name.
11	Value	: Display the measurement values.
12	Unit	: Unit
13	Raw Data	: Voltage of analog input (mV)
14	Notes	: Annotation box
15	ECU	: Display the ECU/controller that controls the devices. (Only if multiple ECU are connected.)

Comment Box

16 Comment: Display information for the selected line (colored in green).

1234 5678			11	12 13	14	15	16
An Diagnostics MenuToolBar News Ne	Engine		/	Diagnostic Tests -Pr	ulse/Analog e		
ECU Information	Description	ysical Val	Unit	Raw Data Notes	ECU		
Diagnostic Codes	ENGINE SPEED CAMSHAFT ROTATION SPEED	1450	r/min	1450 Param 725 Pulse I	Engine		
Freeze Frame Data	AUXILIARY ROTATION SPEED SENSOR	1450	r/min	1450	Engine		
Diagnostic Tests	LOADER REQUEST ROTATION SPEED	1448	r/min	1448	Engine		
	REQUEST ENGINE SPEED	1448	r/min	1448 Param	Engine		
Pulse/Analog etc	RACK ACTUATOR OUTPUT DUTY	96		96 PWM	Engine		
Digital IN etc	ENGINE LOAD MONITOR	62	%	62	Engine		
Digital OUT	ACTUAL EGR VALVE CONTROL VALUE	32		32 Param	Engine		
Anti-us Constant	RACK POSITION SENSOR VOLTAGE	307		307 A/I	Engine		
Active Control	Accelerator Pedal Position	40.4	96	101	Engine	7	
Active Control(Graph)	RACK ACTUATOR CURRENT	3.20	A	64	Engine		
Hysteresis Measure	ECU TEMPERATURE	47.00	degC	10240 A/I	Engine		
	BATTERY VOLTAGE	12.25	V	245	Engine		
Data Logging	SENSOR SOURCE VOLTAGE	5.00	V	100 A/I	Engine		
Historical Data	REQUEST RACK POSITION	297		297 Param	Engine		
ECU Structures	Engine Stop Warning Status	0		0 Param	Engine		1
Sustan Satilars	ENGINE MODE	0		0 0:lsoch.	. Engine		
System Settings	ENGINE COOLANT TEMPERATURE	86	degC	126 A/I	Engine		
	Comment				1		

Figure 6-10 Pulse/Analog etc Screen

6.5.2 Digital IN etc

The On/Off status can be confirmed with this function when checking operations of the input device after error diagnosis or repair. When switching screens, the screen display automatically refresh every 2 seconds.

Operation Tool Bar

- 🚺 进 : Save the ECU's screen display data. (Refer to [7. Error Diagnostic Data Save and Display Functions].)
- 2 🔁 : Print the screen. (Refer to [6.2.2])
- 3 🔚 : Save a screenshot in BMP format. (Refer to [6.2.3])
- 4 📷 : Save the complete historical data in CSV format.
- 5 C : Refresh the current data.
- 6 💭 : Continuously refresh the current data. (2 second interval)
- **7 a** : Stop continuous refresh.

Main Box

	: If multiple ECU are installed, you can switch between screens.
Description	: Display the input device name.
On/Off	: Display the on/off status.
Notes	: Annotation box
ECU	: Display the ECU/controller that controls the devices. (Only if multiple ECU are connected.)
	Description On/Off Notes ECU

Comment Box

13 Comment: Display information for the selected line (colored in green).





6.5.3 Digital Out

This function checks operations of the output device after error diagnosis or repair. The forced On/Off status of the contact cannot be executed if the engine is not stopped. When switching screens, the screen display automatically refresh every 2 seconds.

Operation Tool Bar

- 🚺 进 : Save the ECU's screen display data. (Refer to [7. Error Diagnostic Data Save and Display Functions].)
- 2 🔁 : Print the screen. (Refer to [6.2.2])
- 3 🔚 : Save a screenshot in BMP format. (Refer to [6.2.3])
- Image: Save the complete historical data in CSV format.
- 5 C : Refresh the current data.
- 6 💭 : Continuously refresh the current data. (2 second interval)
- Image: Stop continuous refresh.

Main Box 8

11

13

On/Off

: If multiple ECU are installed, you can switch between screens.

9 Active Control Mode : Display manual operations and update operations.

- When an update operation is performed, manual control is indicated by a check mark.
- Remove the check mark by clicking it and return to automatic control.

ImportantWhen returning to automatic control, whether the status "Maintain the previous status" or "Automatically controlled test - Return to previous status" is set in the ECU/
controller varies by product. Use it with due care.

- **Description** : Displays the output device name.
 - : Displays the status of the current value.
 - For changeable Items, "On/Off" is displayed in blue.
 - Toggle between On and Off by double-clicking.
 - When changing the status, it is necessary to enter the password.
 - The password confirmation will be valid as long as you use this screen.
 - If toggling between On and Off is not permitted by other devices, the words are displayed in red.
 - Output that cannot be turned on and off (e.g. the main relay) is set by the ECU/controller.
- 12 Notes : Annotation box
 - **ECU** : Display the ECU/controller that controls the devices. (Only if multiple ECU are connected.)

• Comment Box

14 Comment: Display information for the selected line (colored in green).

1234 567	8 9 10 2) Tool(I) Help(H	D	11	12	13	14
N IN Diagnostics 중속 m MenuTooBar News ECU Information		Piease change	- Diagnostic Test	ts - Digital(ON/OF	F) OUT	
Diagnostic Codes	Description	On/Off	Notes	ECU	CID	
Freeze Frame Data	ECU MAIN RELAY	OFF	Discrete Output	Engine	63488	
Disconcetio Tests	INTAKE AIR HEATER RELAY1	OFF	Discrete Output	Engine	63491	
Delas Master etc.	PRE-HEATER Lamp	OFF	Discusto Output	Engine	63494	
PulserAnalog etc	Engine warning indicator	OFF	Discrete Output	Engine	63495	
Digital IN etc	ECO MODE Lamo	OFF	Discrete Output	Engine	63492	
Digital OUT	EGR Step MOTOR(A)	OFF		Engine	63499	
Active Control	EGR STEP MOTOR(B)	OFF		Engine	63500	
	EGR STEP MOTOR(C)	OFF		Engine	63501	
Active Control(Graph)	EGR STEP MOTOR(D)	OFF		Engine	63502	
Hysteresis Measure	CSD SOLENOID VALVE	OFF		Engine	63490	
Data Logging	FUEL RACK ACTUATOR RELAY	OFF	Discrete Output	Engine	63489	
Historical Data				/		
EC11 Shuchuran						
System Settings						
	Comment			-		# ×
	Notes : Discrete Output			,		

Figure 6-12 Digital OUT Screen

• Subwindow (Screen Shift)

II If you click "On/Off", the password entry screen is displayed.

Password a	uthentication[Training]
Enter yo	ur password.
User ID Passwo	7CTRIALP rd
	Set Cancel
6.5.4 Active Control

Sets the status for all devices (e.g. engine, clutch, switch, sensor) when operating each product separately by confirming the feedback control (e.g. control the rack position or speed governing of the engine) and product operation.

Important When you start it, the product may start as well.

- ullet Be careful when you work with other personnel.
- Operate with due care to the surroundings.

Operation Tool Bar

- 🚺 进 : Save the ECU's screen display data. (Refer to [7. Error Diagnostic Data Save and Display Functions].)
- 2 🚠 : Print the screen. (Refer to [6.2.2])
- B I ave a screenshot in BMP format. (Refer to [6.2.3])
- 4 📷 : Save the complete historical data in CSV format. (Refer to [6.2.4])

Main Box

5		: If multiple ECU are installed, you can switch between screens.
6	Manual	: Display the status of the active control; a red circle indicates that the active control is in
		progress, a gray circle indicates that it is stopped.
7	Stop button	: Click to stop the active control.
8	Run button	: Click to start the active control.
9	Description	: Control Item names
10	ENG Run	: Indicates that the active control is available.
		Req: Active control only during engine operation.
		Not: Active control only during engine stop.
11	Measured	: Display the measurement value (feedback value).
12	Desired	: Display the target value (current set value). Click the target value to open the subwindow
		and change the value.
13	Unit	: Display the unit.
14	Graph	: A red circle indicates that the graph can be displayed; a gray circle indicates that a mea-
		surement is necessary to display the graph. Clicking the red circle after active control
		switches to the graph display screen.

ECU : Display the ECU/controller that controls the devices. (Only if multiple ECU are connected.)

Comment Box

15

16 Comment: Display information for the selected line (colored in green).

6. Error Diagnostic Function (ECU Access)

ToolBar #	/		/ /	/ /			/	/	/	/ /	
News	Engine	+	-		Diagn	ostic Tests	- Active C	Control	+	*	/
ECU Information	Mamual	Mop button	Run butto	r Description	ENG Run M	leasured D	iaskoa:	Unit	Graph	ECU	CID
Diagnostic Codes	0	[STOP]	(RUN)	AUTO HYSTERESIS	not	0:0			0	Engine	63722
Freeze Frame Data	0	(STOP)	(RUN)	DIRECT EGR VALVE	not	702	700	rimin	0	Engine	837124
Diagonatic Tasts	ŏ	ISTOPI	IRUNI	DIRECT RACK POSIT	not	50	50	131801	ő	Engine	63713
Charge Cost of the Sca	0	[STOP]	[RUN]	ENGINE LOAD MONIT	not		16	%		Engine	63725
Puse/Analog etc	0	[STOP]	[RUN]	HIGH IDLE RACK PO	réq					Engine	63719
Digital IN etc	0	[STOP]	[RUN]	LOW IDLE RACK PO	req		_		_	Engine	63718
Digital OUT											
Active Control	<u> </u>									/	
Active Control(Graph)											
Hysteresis Measure											
Data Logging	1										
Data Logging Historical Data	11							/			
Data Logging Historical Data											
Data Logging Historical Data ECU Structures											
Data Logging Historical Data ECU Structures System Settings											

Figure 6-13 Active Control Screen

Change Subwindow 1

- **1** Item Name : Display the name of the active control Items.
- **2** Operation Button : Display operation buttons such as Up (\blacktriangle) and Down (∇).
- **3** Operation Message : Display conditions set before active control.
- **4** Precaution Message : Display precautions regarding active control.
- **5** Assistance Message : Display additional information for active control.
- 6 Assistance Message : Display target values/measurement values.
- **Confirm** : The confirmation button has two functions.
 - A green light indicates that the product can be operated in active control.
 - The light goes output if the upper limit or lower limit is exceeded during active control.
- 8 Cancel : Close the subwindow.



Change Subwindow 2	
1 Data Name	: Display the name of the active control Items.
2 Measured	: Display the current measurement value of the feedback Item.
3 Max	: Display the maximum setting for the target value.
4 Desired	: Display the current setting (target value).
5 Min	: Display the minimum setting for the target value.
6 Note	: Annotation
7 ▲/ ▼	: Change the setting in increments of 1, 10, and 100.
8 Measurement Mode	: Select to measure the feedback data.
9 ▲ / ▼	: Adjust the measurement time.
10 Set	: Send the set directive value to the ECU and perform active control.
11 Cancel	: Cancel the active control and close the sub-window.
Adjust the direct value wi	th the ▲ / ▼ buttons. Set the direct value of the selected Item with theSet but

• Select **B** "Measuring (graph display)" with **Measurement Mode**, save the feedback data of the set time, and view the data on the graph screen.

ton.

	🇊 Data Set			
0→	Deta Name	DIRECT ENGINE R	PM CONTROL	
2	Measured			
3	Max	180	0 100 🔺 🔻	
4	Desired	150	0 10 🔺 🖛	7
5	Min	80	0 1 🔺 🔻	
			· · · · · · · · · · · · ·	
6	Note	Output Test		
8	Measurem	ent Mode		
	Not mea	suring	Measurement time(sec)	Π
	Measuri	ng(graph display)	10	9
10		► Set	Cancel	

A part of the active control Items are tested according to the previously set program for active controls. In that case, the directive value cannot be entered.

Deta Name Fuel Pump	Learning Restart Function
Measured	
Max	100 🔺 🔻
Desired	10 🔺 💌
Min	1
Note	
Measurement Mode	
Not measuring	Measurement time(sec)

6.5.5 Active Control (Graph)

The graph is only displayed if Measuring (graph display) is selected for active control.

• Additional Information Box (Cursor Value)

Displays the name and value for the data selected by the graph setting operation.

Graph 1: Top, data value

- **1** Position: Displays the data number for the cursor position.
- Display Item data: Displays the Item name and data. The background color and the color of the graph are the same.

Operation Tool Bar

- [3] Image: Save the ECU's screen display data. (Refer to [7. Error Diagnostic Data Save and Display Functions].)
- 4 🔁 : Print the screen. (Refer to [6.2.2])
- 5 🔚 : Save a screenshot in BMP format. (Refer to [6.2.3])
- 6 💼 : Save the complete historical data in CSV format. (Refer to [6.2.4])
- Save the measured data. Save the data of the active control after measurement. For the display of the saved data, refer to [7. Error Diagnostic Data Save and Display Functions].
- B W : Do the settings for the display Item and the scaling of the top graph.

Main Box

Graph 1 is displayed. For details regarding operation of the graph, refer to [7. Error Diagnostic Data Save and Display Functions] on page 154.



Figure 6-14 Active Control (Graph) Screen

6.5.6 Saving the Measured Data

• Click the 📰 button of 🚺 to open the confirmation screen.



• Click "OK" to enter a memo regarding the measured data.



• After entering the memo, Click "OK" then saving is complete.





6.5.7 Hysteresis Measure

Execute the active control (active control) of all automatic hysteresis measurements to start the set program, collect data from the ECU, active the below functions and display the graph in this screen.



Figure 6-15 Selection screen for switching the Graph Display



- The response to the results gathered by the automatic hysteresis measurement differs depending on the product.
 - For details, refer to the product's technical manual or consult with the YANMAR Service Department.

Additional Information Box (Data Display)

- **1** Cursor Data : Display data for the cursor position. (Only on the trend graph screen)
- **X-Y**, **Trend** : Click the corresponding button to switch to an X-Y graph (x-axis: current) and trend graph (x-axis: time).

Operation Tool Bar

- 3 \Lambda : Print the screen.
- 🖪 🔚 : Save a screenshot in BMP format.
- 5 🛅 : Save the measurement results in CSV format.
 - date_time_DTHY.CSV: raw data of X-Y graph only
 - date_time_DTHYC.CSV: point data and calculated results
- Save the measured data. Save the data of the active control after measurement. For the display of the saved data, refer to [7. Error Diagnostic Data Save and Display Functions].
- Image: Do the scaling settings for the X-Y plot graph.

Main Box

Displays a graph of the raw data on the top.

For details regarding operation of the graph, refer to [7. Error Diagnostic Data Save and Display Functions] on page 154. < X-Y graph >



Figure 6-16 Hysteresis Measure Screen

< Trend graph >



Figure 6-17 Trend Graph Screen

Remark

- In case of rack hysteresis
 - The substitute value (pulse duty value) of the rack actuator current is on the x-axis. The substitute value (digital encode value of the voltage) of the rack position is on the y-axis. Because the rack position value is displayed together with the increased or decreased x-axis value, the hysteresis is easily identified. Generally, if the x-axis value is increased, the y-axis value changes along the bottom line; if the x-axis value is decreased, the y-axis value changes along the top line.
 - The x-axis shows time (0.1 sec/point), the y-axis shows the substitute value for rack position (digital encode value of voltage) and the substitute value for the rack actuator current (pulse duty value). Any divergence between the rack position (rack) and the electric current value (duty) is easily identified.

6.5.8 Reference material: Digital OUT (Engine/2G Eco TNV series)

Digital OUT Screen

In the red box in the below menu **Diagnostic tests**, select **Digital Out** to switch to the digital out screen.

1	Description	: Display the setting Items.
2	On/Off	: Display the current settings.
3	Notes	: Display reference information.



How to Perform Digital OUT

Click the On/Off box to the right of the desired Item. The password confirmation screen is displayed. First time only: Enter the login password and double-click the set button to toggle the output on/off.



If an Item is light blue, digital out has been performed before.

SMARTASSIST-Direct					
File(F) View(V) Operation(O) Tool(T) Help(H)				
🔊 🔊 Diagnostics 🗇 🔹 =	ON LINE Active Code				
MenuToolBar	5 ×				
ECU Information	Diagnostic Tests - Digital(ON/OFF) OUT				
Diagnostic Codes	Active Control Mode	Plea	se change the ins	truction by	double-clicking.
Freeze Frame Data	Description	On/Off	Notes	CID	
Discussio Tests	Engine Stop Request Output	ON		64001	
Diagnostic lests	INTAKE AIR HEATER RELAY1	OFF	Discrete Output	63491	
Pulse/Analog etc	PRE-HEATER Lamp	OFF		63494	•
Digital IN etc	Engine Warning Indicator	OFF	Discrete Output	63495	
District OUT	ENGINE STARTER Interlock RELAY	OFF	Discrete Output	63497	
Digital OUT	ECO MODE Lamp	OFF		63498	-
Active Control	Glow Rely	OFF		64000	
Active Control(Graph)	Glow Lamp	OFF		64017	
	EGR Step MOTOR(A)	OFF		63499	
Hysteresis Measure	EGR STEP MOTOR(B)	OFF		63500	
Data Logging	EGR STEP MOTOR(C)	OFF		63501	
Historical Data	EGR STEP MOTOR(D)	OFF		63502	
FOUL Obrighters	ECU MAIN RELAY	ON	Discrete Output	63488	
ECU Structures				~ · · · · ·	
System Settings	Comment				8

If an On/Off box is black, digital out cannot be performed on that Item.



Step motors (phase A to D) can only have one Item turned ON.

SMARTASSIST-Direct						(ic) (th) point
ile(F) View(V) Operation(O)	Tool(T) Help(H)					
🐘 Diagnostics 🗃 🛊 📼 🕻	ON LINE Active Code					
enuToolBar # ×						
ECU Information	Diagnostic Tests - Digital(ON/OFF) OUT					
Diagnostic Codes	V Active Control Mode	Plea	se change the inst	ruction by c	louble-clicking.	
Freeze Frame Data	Description	On/Off	Notes	CID		
Diagnostic Tests	INTAKE AIR HEATER RELAY1	OFF	Discrete Output	63491		
Pulse/Analog etc	PRE-HEATER Lamp	OFF		63494		
Disite IN ste	Engine Warning Indicator	OFF	Discrete Output	63495		
Digital IN etc	ENGINE STARTER Interlock RELAY	OFF	Discrete Output	63497		
Digital OUT	ECO MODE Lamp	OFF		63498		
Active Control	Glow Rely	OFF		64000		
Active Control	Glow Lamp	OFF		64017		1
Active Control(Graph)	EGR Step MOTOR(A)	OFF		63499		
Hysteresis Measure	EGR STEP MOTOR(B)	OFF		63500		
	EGR STEP MOTOR(C)	ON		63501		
Data Logging	EGR STEP MOTOR(D)	OFF		63502		
Historical Data	ECU MAIN RELAY	ON	Discrete Output	63488		
ECU Structures	Shutdown Permission Output(CR-ECU)	OFF		64018		
System Settings	Commont					

and Barlin

File(E) View(V) Operation(Q) Tool(T) Help(H) 運動機関での運動器 TRAINING MenuToolBar #× Engine - Diagnostic Tests - Digital(ON/OFF) OUT News ECU Information Active Control Mode Please change the instruction by double-clicking. Diagnostic Codes On/Off Notes ECU MAIN RELAY Discrete Output 63488 OFF Engine Freeze Frame Data INTAKE AIR HEATER RELAY1 63491 Discrete Output Engine ON Diagnostic Tests PRE-MEATER Lamp ON 63494 Engine Engine Warning Indicator ON Discrete Output 63495 Engine Pulse/Analog etc ENGINE STARTER Interlock RELAY ON 63497 Discrete Output Engine Digital IN etc. ECO MODE Lamp EGR Step MOTOR(A) EGR STEP MOTOR(B) ON 63498 Engine Digital OUT OFF 63499 Engine OFF 63500 Active Control Engine EGR STEP MOTOR(C) OFF 63501 Engine Active Control(Graph) EGR STEP MOTOR(D) ON 63502 Engine Hysteresis Measure CSD SOLENOID VALVE ON 63490 Engine Data Logging FUEL RACK ACTUATOR RELAY ON Discrete Output 63489 Engine Historical Data Remove this checkmark to turn off all items that allow ECU Structures output control. System Settings Comment Notes Discrete Output SMARTASSIST-Direct File(F) View(V) Operation(O) Tool(T) Help(H) ● 4 4 6 C C ■ 8 5 🏠 🤝 Diagnostics 🗇 🚸 🚽 ON LINE Active Code MenuToolBar 8 Diagnostic Tests - Digital(ON/OFF) OUT ECU Information Diagnostic Codes Active Control Mode Please change the instruction by double-clicking. Description Notes Freeze Frame Data Engine Stop Request Output OFF 64001 **Diagnostic Tests** INTAKE AIR HEATER RELAY1 OFF 63491 Discrete Output Pulse/Analog etc PRE-NEATER Lamp OFF 63494 Engine Warning Indicator OFF Discrete Output 63495 Digital IN etc ENGINE STARTER Interlock RELAY OFF Discrete Output 63497 **Digital OUT** ECO MODE Lamp OFF 63498 Glow Rely Active Control OFF 64000 Glow Lamp OFF 64017 Active Control(Graph) OFF EGR Step MOTOR(A) 63499 Hysteresis Measure EGR STEP Data Logging You can enter a checkmark again, but the items remain OFF. EGR STEP Historical Data Comment ECU Structures Notes : System Settings

Performing digital out automatically puts a check mark into the checkbox.

When moving to another tab, a confirmation dialog for the end of the active control is displayed.

- **1** Yes : Turn all applicable output statuses to off and move to another tab.
- **2 No** : Keep all current output statuses and move to another tab.



6.5.9 Referance material: Active Control (Engine TNV series for Tier3/Tier4)

Items for active control vary by engine model.

		Items for active control										
Engine model	Fuel injec- tion system	Engine speed control	Rack position control	Rack hysteresis	EGR valve opening	Load monitor output	CR injector	Intake/ Exhaust valveopening	DPF regen- eration	Pump training	Aqueous urea injection	Aqueous urea tank heating valve
3/4TNV**-Z, E, A, C	Yanmar 2G eco pump	0	0	0	0	0	-	-	-	-	-	-
3TNV**F	Yanmar 2G eco pump	0	0	0	0	0	-	-	-	-	-	-
4TNV94HT-Z	Denso CR	0	-	-	0	-	0	-	-	0	-	-
4TNV94CHT	Denso CR	0	-	-	0	-	0	0	0	0	-	-
4TNV94FHT	Denso CR	0	-	-	0	-	0	0	0	0	0	0
3/4TNV**C/CT/CHT	Bosch CR	0	-	-	0	-	0	0	0	-	-	-

The items for active control are shown by the engine model in the below table.

■Active Control Initial Screen

3

Manual : Marked with a red light during active control.

2 Stop button/Run button : Select Stop/Run.

ENG Run : Indicates that the active control is available.

Req: Only active during engine operation

Not: Only active during engine stop

4 Measured : Display the current measurement values.

Desired : Display the control target values.

G Graph : Graph display button



* A safety is locked on the ECU side.

If the active control cannot be performed, the in-progress lamp does not turn on.

6. Error Diagnostic Function (ECU Access)

On the "YANMAR 2G ECO Pump" engine and "4TNV94HT-Z: DENSO CR", you can check the running operating state by selecting "Pulse/Analog Input/Output", "Digital Input", "Digital Output" "Forced Operation Graph" from the diagnosis test menu during forced operation, however, on the "DENSO CR" and "Bosch CR" engines, although "Forced Operation Graph" can be selected, "Pulse/Analog Input/Output", "Digital Input", "Digital Output", "Digital Output, "Digita

		Se	electable menu du	ring forced operati	operation		
Engine model	Fuel injection system	Pulse/Digital Input/Output	Digital Input etc.	Digital Output	Forced operation graph		
3/4TNV**-Z, E, A, C	Yanmar 2G eco pump	0	0	0	0		
3TNV**F	Yanmar 2G eco pump	0	0	0	0		
4NTV94HT-Z	Denso CR	0	0	0	0		
4TNV94CHT	Denso CR	-	-	-	0		
4TNV94FHT	Denso CR	-	-	-	0		
3/4TNV**C/CT/CHT	Bosch CR	-	-	_	0		

■Directive Engine Speed Control

1 Clicking the execution button or the target value box displays the password confirmation screen. Enter the password. (First time only):

Password auth	entication[Training]	X
Enter your	· password.	
User ID	7CTRIALP	
Password		
	Set Cancel	

- **2** Select the directive value on the data setting screen.
 - **1 Desired** : Enter the desired.
 - 2 ▲ / ▼ : Adjustable in increments of 1, 10, and 100.
 - **3** : Adjustable by a slider.
 - 4 Set : Confirm an entry.
 - **5 Cancel** : The manual lamp is lit, but it indicates the active control mode.

	Deta Name DIRECT ENGINE RPM CONTROL
	Max 65535 100
1	Desired 700 10
	Min 0 1 🛋 🔻
	Note Output Test
	Measurement Mode Not measuring Measurement time(sec) Measuring(graph display)
	Set Cancel

3 During active control, the manual lamp is red.

wToolBar											
No.	Engine				+ Diag	nostic Test	is - Active C	lontrol			
ECU Information	ELCONOMIC D	top butto b	in butto	Description	ENG Run	Vessured	Desired	Unit	Graph	ECU	CID
Discoute Codes		[STOP]	RUN	DIRECT ENGINE RP	reg	700	700	rimin	0	Engine	6371
Enagriostic Godes	-	[STOP]	[RUN]	DIRECT RACK POSIT	not	50	50		0	Engine	6371
Freeze Frame Data	0	[STOP]	RUN	AUTO HYSTERESIS	not	0:0			0	Engine	6372
Diagnostic Tests	0	[STOP]	[RUN]	LOW IDLE RACK PO	req					Engine	6371
Duise/Apping etc.	0	[STOP]	[RUN]	HIGH IDLE RACK PO	req					Engine	6371
1. manufactory and	0	[STOP]	[RUN]	DIRECT EGR VALVE	not		0			Engine	6372
Digital IN etc	0	[STOP]	[RUN]	ENGINE LOAD MONIT	not		16	%		Engine	6372
Digital OUT											
Active Control											
Active Control(Graph)											
Hysteresis Measure	1										

Directive Engine Speed Control (Measurement)

1 Select the directive value at the data selection screen. Change the measurement mode to "Change to Measuring (graph display)".

1	Desired	: Enter the desired.
2	 Measuring 	: Insert a checkmark.
3	Measurement Time	: Enter the measurement time. (seconds)
4	Set	: Start the measurement.



2 Wait until the measurement is finished.

	Please wait p	processing.
Data Name	DIRECT EN	GINE RPM CONTROL
Measured	39	
Desired	700	

3 When the measurement is finished, a graph is displayed. (Active control continues.)

Graph : Display the graph.

	onin a									/	
Diagnostics 5 4 - TR	AINING ALL	e Code								/	
ToolBar. **	Basing								/	/	
News	Engne				- Dag	nosso lests	- Active C	Ontrol	/	_	
ECU Information	Manual	top butto	iun butto	Description	ENG Run	Measurec 1	Desired	Unit	Griph	ECU	CIT
Diagnostic Codes		[STOP]	[RUN]	DIRECT ENGINE RP	req	13	700	atimin.	4	Engine	637
Freeze Frame Data	0	[STOP]	(RUN)	DIRECT RACK POSIT	100	0.0	30		0	Engine	637
Disease Franks	0	ISTOP	IRUNI	LOW IDLE BACK PO	1905				0	Engine	637
Chagnosce resis	0	(STOP)	RUN	HIGH IDLE RACK PO	reg					Engine	637
Pulse/Analog etc	0	(STOP)	[RUN]	DIRECT EGR VALVE	not		0			Engine	637
Digital IN etc	0	[STOP]	(RUN)	ENGINE LOAD MONIT	not		16	%		Engine	637
Digital OUT											
Digital OUT Active Control											
Digital OUT Active Control Active Control(Graph)											
Digital OUT Active Control Active Control(Graph) Hysteresis Measure											
Digital OUT Active Control Active Control(Graph) Hysteresis Measure Data Locolog											
Digital OUT Active Control Active Control(Graph) Hysteresis Measure Data Logging											
Digital OUT Active Control Active Control(Graph) Hysteresis Measure Data Logging Historical Data											
Digital OUT Active Control Active Control(Graph) Hysteresis Measure Data Logging Historical Data ECU Structures											
Digital OUT Active Control Active Control(Graph) Hysteresis Measure Data Logging Historical Data ECU Structures System Settings											

- **4** The measurement results are displayed in a graph.
 - 1 🔚 : The y-axis scale is adjustable.
 - **2 Reduce** / **Expand** : The x-axis scale is adjustable in 6 steps.

le(E) View(VI Operation(O)	Tool(I) Help(H)					The second se
REMER						
Diagnostics	RAINING Active Code					
enuToolBar						
News	Diagnostic Tests - Ac	tive Control(Graph)				2. D. L. D. L.
ECU Information						Resultion
Diagnostic Codes	5000.0					ERC
Freeze Frame Data						
Diagnostic Tests						2015/10/08 15:55:4
Pulse/Analog etc	3750.0					ype
Digital IN etc						ino
Digital OUT	2500.0					
Active Control						
Active Control(Graph)	a second					
Hysteresis Measure	1250.0					
Data Logging						
Historical Data	0.0				_	
ECU Structures	0.0	3.0	6.0	9.0	12,0	
System Settings	- Summer					
	Reduce *1		2		Expand	
	120000000		_			10

Specified Rack Position Control

- **1** Clicking the execution button or the target value box opens the data setting screen.
 - **Run button** : Display the setting screen.



- **2** Select the directive value on the data setting screen.
 - **1 Desired** : Enter the desired.
 - Image: Image
 - **3** : Adjustable by a slider.
 - 4 Set : Confirm an entry.
 - **5 Cancel** : The manual lamp is lit, but it indicates Active control mode.

Deta Name	DIRECT RACK PO	SITION CONTROL	
Measured Max	6553	35 100 🔺 💌	
Desired	Ę	50 10 🔺 🖛	
Min		0 1 🔺 💌	
Note	Output Test nt Mode		
 Not meas Measurin 	uring g(graph display)	Measurement time(sec)	
	Set	Cancel	

3 During active control, the manual lamp is red.

A BA Diagnostics	RAINING ACOV	e Code					
MenuToolBar #	•						
News	Engine			Diagnostic Tests - Act	ive Control		
ECU Information	Manual	top butto la	in butto	Description	ENG Run	Measured	Desired
Diagnostic Codes	0	[STOP]	[RUN]	DIRECT ENGINE RPM CONTROL	req	702	700
Chagnosaic Codes		[STOP]	[RUN]	DIRECT RACK POSITION CONTROL	not	50	50
Freeze Frame Data	0	[STOP]	[RUN]	AUTO HYSTERESIS MEASUREMENT	not	0:0	
Diagnostic Tests	0	[STOP]	[RUN]	LOW IDLE RACK POSITION AUTO TUNING	req		
Pulse/Analog etc	0	[STOP]	[RUN]	HIGH IDLE RACK POSITION AUTO TUNING	req		
P distancy Cit	0	[STOP]	[RUN]	DIRECT EGR VALVE CONTROL	not		0
Digital IN etc	0	[STOP]	[RUN]	ENGINE LOAD MONITOR OUTPUT	not		16
Digital OUT							
Active Control							
Active Control(Graph)							
Hysteresis Measure							
Data Logging							

Specified Rack Position Control (Measurement)

1 Select the directive value on the data setting screen. Change the measurement mode to "Change to Measuring (graph display)".

1 Desired	: Enter the desired.
2 • Measuring	: Insert a checkmark.
3 Measurement Time	: Enter the measurement time. (seconds)
4 Set	: Start the measurement.

Data Set	
Data Name	DIRECT RACK POSITION CONTROL
Measured	
Max	65535 100 10 1
1 → Desired	
Min	
Note	Output Test
Measuremen	nt Mode
Not mean	suring Measurement time(sec)
2 • Measurin	ng(graph display)
4	Set Cancel

2 Wait until the measurement is finished.

Information[Train]	ning]	
	Please wait processir	ng.
Data Name	DIRECT RACK POSIT	ION CONTROL
Measured	9	
Desired	50	
	Cancel	

3 When the measurement is finished, a graph is displayed. (Active control continues.)

Graph : Display the graph.

De(E) View(V) Operation(V)	(00i(T) Help(D	0								/
The Disconstine (m) (b) (m)	PAINING AND	Cart								/
enuToolBar	X NINING MUN	ecose								/
end roubler .	Engine			Diagnos	tic Tests -	Active Co	ontrol		/	
News										
ECU Information	Manual	top butto	un butto	Bescription	ENG Rur	easure	Desired	Unit	Gr .ph	ECU
Diagnostic Codes	0	[STOP]	[RUN]	DIRECT ENGINE RPM CONTROL	req	702	700	rimin	0	Engin
Freeze Frame Data		ISTOP	IRUNI	DIRECT RACK POSITION CONTROL	not	0.0	-00			Engin
Disassotia Testa	ő	ISTOPI	RUN	LOW IDLE BACK POSITION AUTO T	reg				~	Engin
Diagnosid Tests	ŏ	ISTOPI	RUN	HIGH IDLE RACK POSITION AUTO T	reg					Engin
Pulse/Analog etc	0	ISTOPI	(RUN)	DIRECT EGR VALVE CONTROL	not		0			Engin
Digital IN etc	0	[STOP]	(RUN)	ENGINE LOAD MONITOR OUTPUT	not	1	16	96		Engin
										1010
Digital OUT										
Digital OUT	i									
Digital OUT Active Control										
Digital OUT Active Control Active Control(Graph)										
Digital OUT Active Control Active Control(Graph) Hysteresis Measure										
Digital OUT Active Control Active Control(Graph) Hysteresis Measure Data Logging										
Digital OUT Active Control Active Control(Graph) Hysteresis Measure Data Logging Historical Data										
Digital OUT Active Control Active Control(Graph) Hysteresis Measure Data Logging Historical Data										
Digital OUT Active Control Active Control(Graph) Hysteresis Measure Data Logging Historical Data ECU Structures										
Digital OUT Active Control Active Control(Graph) Hysteresis Measure Data Logging Historical Data ECU Structures System Settings										
Digital OUT Active Control Active Control(Graph) Hysteresis Measure Data Logging Historical Data ECU Structures System Setlings										

- **4** The measurement results are displayed in a graph.
 - **1** E : The y-axis scale is adjustable.

1

2 Reduce / **Expand** : The x-axis scale is adjustable in 6 steps.

(E) View(V) Operation(Q) Tool(I) Help(H)					loto mun	
3 6 5 5 6 6 6 6							
Diagnostics 🗃 🛉 📼	TRAINING Active Code						
uToolBar	ex	Control Control					
News	Diagnostic Tests - Ac	tive Control(Graph)				RefData Read	
ECU Information					Pos	sition 1	
Diagnostic Codes	1023.0				DR	PC 1	
Freeze Frame Data					112	2015/10/09 16:07:08	
Diagnostic Tests	767.2				Ref	Graph Set[Training]	(Coldin
Pulse/Analog etc					Typ	Display Mode	Default File Open Edit
Digital IN etc					Sno	Graph Top	
Digital OUT	511.5					Childing C Digital (Childin)	Select Set
Active Control						No. Data Select 100 10 1	100 10
Active Control(Graph)						1 DRPC :DIRECT RACK POSITION CONT	ROL: [Engine]
Hysteresis Measure	255.8					Min 0 A A Max	1023
Data Logging							······································
Historical Data	0.0					2	
ECU Structures	0.0	2.8	5.5	8.2	11.0	Min 🔺 🔺 Max	
System Settings	·				a second second	The second secon	
	Reduce *1				Expand	3	
	Comment					Min A A Max	
							_ _ _ _ _ _ _ _ _
						4	
						Min AAA Max	
							Ornert
						File Save Set	Cancer

■Automatic Hysteresis Measurement

- **1** Measure the hysteresis of the rack actuator.
 - **Set** : Start the measurement.

Deta Name AUTO HYSTER	ESIS MEASUREMENT
Measured	
Max	100 🔺 💌
Desired	10
Min	1 🛋 🔻
	Q
Note	
Measurement Mode	
Measurement Mode Not measuring	Measurement time(sec)

2 Wait until the measurement is finished.

Information[Train]	ing]	
	Please wait processi	ng.
Data Name	AUTO HYSTERESIS M	IEASUREMENT
Measured	2914:414	
	Cancel	

3 Switch to the hysteresis Measure.

1 Yes : Display the measurement graph.



- **4** The X-Y display mode compares measurement discrepancies between the forward and reverse measurement, and its wrap-around is at the right end of the graph.
 - **1 E** : The x- and y-axis scale are adjustable.
 - **2 Reduce** / **Expand** : The y-axis scale is adjustable in 6 steps.
 - **Reduce** / **Expand** : The x-axis scale is adjustable in 6 steps.
 - **X-Y** : Display the X-Y display mode.

X-axis	Select Set	File C	pen File Sav
No. Data Select M	in 100 10 1	Max	100 10 1
1 Duty bit 0		1000	
2 Ract bit0		1200	
Y-axis	Set Cancel	Q	

- **5** The trend display mode compares the directive value (black) and the measurement value (red), and displays a time line.
 - 1 🔚 : The y-axis scale is adjustable.
 - **Reduce** / **Expand** : The x-axis scale is adjustable in 6 steps.
 - **3 Trend** : Display the trend display mode.



Automatic Correction of the Idle Rack Position (L-idle, H-idle)

This function is limited to developers.

ToolBar	1 M.					
News	Engine	_		 Diagnostic Tests - A 	ctive Control	
ECU Information	Manual	top butto	tun butto	Description	ENG Run	Measured
Discostic Codes	0	[STOP]	[RUN]	DIRECT ENGINE RPM CONTROL	req	70
Diag insue obdes	0	[STOP]	[RUN]	DIRECT RACK POSITION CONTROL	not	200722
Freeze Frame Data	0	[STOP]	(RUN)	AUTO HYSTERESIS MEASUREMENT	not	960:24
Diagnostic Tests	0	[STOP]	[RUN]	LOW IDLE RACK POSITION AUTO TUNING	req	
Puise/Analog etc	0	[STOP]	[KUN]	HIGH IDLE RACK POSITION AUTO TUNING	req	
	0	[STOP]	[RUN]	DIRECT EGR VALVE CONTROL	not	
Digital IN etc	0	[STOP]	[RUN]	ENGINE LOAD MONITOR OUTPUT	not	
Digital OUT						
Active Control						
Active Control(Graph)	3					
Hysteresis Measure	3					
Data Logging						
Historical Data						
	-					
ECU Structures						
ECU Structures System Settings						

When trying to execute it, the below error message is displayed.

Data Set[Training	9]	
Deta Name	LOW IDLE RACK	POSITION AUTO TUNING
Measured		
Max		100 🔺 💌
Desired		10
Min		
Note	Output Test	
Measurem	ent Mode	
Not mea	suring	Measurement time(sec)
© Measuri	ng(graph display)	10
	Set	Cancel

■EGR Valve Opening Control

- **1** Select the directive value on the data setting screen.
 - **1 Desired** : Enter the desired.
 - **2** A : Adjustable in increments of 1, 10, and 100.
 - **3** : Adjustable by a slider.
 - * The directive value must be between 0 and 255. (Entry range is 0 54)
 - * If a value higher than the specified entry value (max. 54) is set, the value on the screen may be greater than
 - 54, but the actual effective value is limited to 54.
 - **Set** : Confirm the entry.

	ita Set[Training	9)	le l	
De Me Ma	eta Name easured ax	DIRECT EGR VA	LVE CONTROL	
De	sired		0 10 🔺 🖛	
Mi	n	Î	0 1 🔺 🔻	
No	ote	Output Test	Y a constant of a	
N	leasurem	ent Mode		Ī
0	Not mea Measuri	suring ng(graph display)	Measurement time(sec)	
		→ Set	Cancel	

2 Active control starts, and the manual lamp lights in red.

nu toolBar "						
	-			Discourse Train	Nation Combail	
News	Engine			Diagnostic Tests - /	Active Control	
ECU Information	Manual	top butto	tun butto	Description	ENG Run	Measured
Disapostic Codes	0	[STOP]	[RUN]	DIRECT ENGINE RPM CONTROL	req	70
Cheghiosoc Godes	0	[STOP]	[RUN]	DIRECT RACK POSITION CONTROL	not	made
Freeze Frame Data	0	[STOP]	[RUN]	AUTO HYSTERESIS MEASUREMENT	not	960:24
Diagnostic Tests	0	[STOP]	[RUN]	LOW IDLE RACK POSITION AUTO TUNING	req	
Dulse/Apples etc.	0	[STOP]	[RUN]	HIGH IDLE RACK POSITION AUTO TUNING	req	
Fuse/Analog etc	•	[STOP]	[RUN]	DIRECT EGR VALVE CONTROL	not	
Digital IN etc	0	[STOP]	[RUN]	ENGINE LOAD MONITOR OUTPUT	not	
Digital OUT						
Active Control						
Active Control(Graph)						
Hysteresis Measure						
Hysteresis Measure Data Logging	i l					
Hysteresis Measure Data Logging Historical Data						
Hysteresis Measure Data Logging Historical Data ECU Structures						
Hysteresis Measure Data Logging Historical Data ECU Structures						
Hysteresis Measure Data Logging Historical Data ECU Structures System Settings						
Hysteresis Measure Data Logging Historical Data ECU Structures System Settings	16					
Hysteresis Measure Data Logging Historical Data ECU Structures System Settings	Comment					

Engine Load Monitor Output

- **1** Select the directive value on the data set screen.
 - **Desired** : Enter the desired.
 - **2** \blacktriangle / **V** : Adjustable in increments of 1, 10, and 100.
 - 3 : Adjustable by a slider.
 - 4 Set : Confirm the entry.



2 Active control starts, and the manual lamp lights in red.

	A second					
nenu looibar e	Engine			- Disopostic Tests - A	Letive Control	
News	Linguite			g ologioade reads -	Cave Connor	
ECU Information	Manual	top butto	un butto	Description	ENG Run	Measured
Diagnostic Codes	0	[STOP]	[RUN]	DIRECT ENGINE RPM CONTROL	req	70
	0	[STOP]	[RUN]	DIRECT RACK POSITION CONTROL	not	1
Freeze Frame Data	0	[STOP]	[RUN]	AUTO HYSTERESIS MEASUREMENT	nót	960:24
Diagnostic Tests	0	[STOP]	[RUN]	LOW IDLE RACK POSITION AUTO TUNING	req	
Pulse/Analog etc	0	[STOP]	[RUN]	HIGH IDLE RACK POSITION AUTO TUNING	req	
Contraction of the second	0	[STOP]	[RUN]	DIRECT EGR VALVE CONTROL	not	
Active Control Active Control(Graph) Hysteresis Measure Data Logging Historical Data ECU Structures System Settings						
	Comment					

■Injector Test

Fuel injection is turned on and off by each cylinder.

File(E) View(V) Operation() Tool(T) Help	(H)				
		(11)				
Diagnostics	ON LINE Activ	e Code				
MenuToolBar #	×					
ECI Information	Diagnostic Te	ests - Active Contro	l			
Discrectio Codes	Manual	Stop button	Run button	Description	ENG Run	Measured D
Diagnostic Codes	0	[STOP]	[RUN]	DIRECT ENGINE RPM CONTROL	req	0
Freeze Frame Data	0	[STOP]	[RUN]	Fuel Pump Learning Restart Function	-	
Diagnostic Tests	0	[STOP]	[RUN]	DIRECT EGR VALVE CONTROL	not	
Pulse/Analog etc	•	[STOP]	[RUN]	ENGINE LOAD MONITOR OUTPUT	not	
Digital IN etc		[STOP]	[RUN]	Injector Test		
Digital OUT	í .					
Active Control						
Active Control(Graph)	j					
Hysteresis Measure						
Data Logging						
Historical Data						
ECU Structures	Comment					6
System Settings	Notes : Output Test					
						CONTINUE
Baudrate : 500k Type:4TNV94	HI-ZXSRA/SN	0:00117				ONLIN

Screen display is changed by selecting the flywheel position.

Matching the installed settings and the screen display prevents mis-numbering of cylinders.

Injector Test						X
Injector						
Control Flywh	No Cylir ON eel	.1 N nder Cy ON	lo.2 linder ↓ ↓	No.3 Cylinder ON	No.4 Cylinder ON	Ī
Position • Left s	n of flywł ide)© Ri	neel ight side		Set	Cance	
injector lest						Contraction of the second
Control C	No.4 cylinder DN	No.3 Cylinder ON	No.: Cylind ON	2 No der Cylin ON	.1 Ider Flywł	heel
Position	of flywh	eel		Set	Cance	a)

When **v** is selected, the injection is stopped (OFF). When **i** is selected, the fuel injects (ON).

Click "Set", then ON/OFF setting is confirmed.

 * If more than 2 cylinders are set to "OFF", the engine may stop.

🎲 Injector T	iest				
Injector Control	No.4 Cylinder ON	No.3 Cylinder ON	No.2 Cylinder ON	No.1 Cylinder OFF	wheel
Positio ⊚ Left	on of flywh side	neel ght side		Set Can	cel

Click "STOP" to move to another screen.

SMARTASSIST-Direct							
File(F) View(V) Tool(T)	Help(H)						
🔊 🔝 Diagnostics 🖪 🔹	- ON LINE Activ	ve Code					
MenuToolBar	ð ×						
ECU Information	Diagnostic Te	ests - Active Contro	bl				
Diagnostic Codes	Manual	Stop button	Run button	Description	ENG Run	Measured	De
	- 0	[STOP]	[RUN]	DIRECT ENGINE RPM CONTROL	req	C)
Freeze Frame Data	0	[STOP]	[RUN]	Fuel Pump Learning Restart Function	-		
Diagnostic Tests	0	[STOP]	[RUN]	DIRECT EGR VALVE CONTROL	not		
Pulse/Analog etc		[STOP]	[RUN]	ENGINE LOAD MONITOR OUTPUT	not		
Digital IN etc		[STOP]	[RUN]	Injector Test	-		
Digital OUT	-						
Active Control	-						
Active Control(Graph)	- 1						
Active Control(Graph)							
Hysteresis Measure							
Data Logging				-			
Historical Data							
ECU Structures	Comment						ð ×
System Settings	Notes :						
Cystem Cettings	Output Test	t					
Poudrate : 500k Tun -: 4Th		00117					
Saudrate . SOUK Type.411	SHIT-LASKA/ SI	0.00117				0	NLINE

Baudrate : 500k Type:4TNV94HT-ZXSRA / SNo:00117

■Intake Throttle Position Control

You can set the desired position of the intake throttle valve.

This is valid only when the engine is stopped.

SWARTASSIST-Direct									
File(E) View(⊻) Operation(Q) Tool(⊥) Help(⊞)									
🔝 🔝 Diagnostics 🗐	🔊 🔊 Diagnostics 🗐 🖶 📼 TRAINING Active Code								
MenuToolBar									
ECU Information	Manual	Stop button	Run button	Description	ENG Run	Mea			
Diagnostic Codes	0	[STOP]	[RUN]	Direct Engine RPM Control	req				
Freeze Frame Data	0	[STOP]	[RUN]	Direct EGR Valve Control	not				
Distance tie Teste	0	[STOP]	[RUN]	Injector Test	-				
Diagnostic Tests	0	[STOP]	(RUN)	Intake Throttle Position Control	not				
Pulse/Analog etc	0	[STOP]	[RUN]	Exhaust Throttle Position Control	not				
Digital IN etc	0	[STOP]	[RUN]	DPF Active Regeneration	req				
Digital OUT									
Active Control									
Active Control(Graph									
Hysteresis Measure									
Data Logging	•		m			۲			
Historical Data	Comment					₽×			
ECU Structures	Notes : Changin	g intake throttle	valve position to	the command value. Cranking is necessar	y before testing	g _			
Baudrate : 500k Engine	Type(Vehic	le Manufacture):	4TNV88C-K / En	ngine S/N:12345	OFF	LINE			

Adjust the directive value with the \mathbf{V} / \mathbf{A} . The minimum value is 0.4.

Click "Set", then the directive value setting is confirmed.

🗊 Data Set[Trainin	🌮 Data Set[Training]					
Deta Name	Intake Throttle Positi	on Control				
Measured						
Max	100.0	40				
Desired	0.0	4				
Min	0.0	0.4				
		P				
Note	Changing intake thro value. Cranking is ne detect a speed sens during engine stop. C	ttle valve position to the command ecessary before testing due to or signal. This test can be effective Condition for release : Key off				
Measurem	nent Mode					
Not mea	asuring N	leasurement time(sec) 📥				
ି Measuri	Measuring(graph display)					
	Set	Cancel				

Exhaust Throttle Position Control

You can set the desired position of the intake throttle valve.

This is valid only when the engine is stopped.

🛊 SMARTASSIST-Direct								
File(<u>F</u>) View(<u>V</u>) Operation(<u>Q</u>) Tool(<u>T</u>) Help(<u>H</u>)								
🔊 🔊 Diagnostics 🗐 🖶 📼 TRAINING Active Code								
MenuToolBar								
ECU Information	Manual	Stop button	Run button	Description	ENG Run	Mea		
Diagnostic Codes	0	[STOP]	[RUN]	Direct Engine RPM Control	req			
Freeze Frame Data	0	[STOP]	[RUN]	Direct EGR Valve Control	not			
Discuss the Tasks	0	[STOP]	[RUN]	Injector Test	-			
Diagnostic lests	0	[STOP]	[RUN]	Intake Throttle Position Control	not	Ĩ		
Pulse/Analog etc	0	[STOP]	[RUN]	Exhaust Throttle Position Control	not			
Digital IN etc	0	[STOP]	[RUN]	DPF Active Regeneration	req			
Digital OUT								
Active Control								
Active Control								
Active Control(Graph								
Hysteresis Measure								
Data Logging	•		m			۰.		
Historical Data	Comment					ē×		
	Notes ·					_		
ECU Structures	Changin	g exhaust throttle	e valve position	to the command value. This test can be effect	tive during			
K		· • · · · ·	· · ·/	*		Ť		
Baudrate : 500k Engine	Type(Vehic	le Manufacture):	4TNV88C-K / Er	ngine S/N:12345	OFF	LINE		

Adjust the directive value with the \mathbf{V} / \mathbf{A} . The minimum value is 0.4.

Click "Set", then the directive value setting is confirmed.

🎲 Data Set[Trainin	g]	X.				
Deta Name	Exhaust Throttle Pos	tion Control				
Measured						
Max	100.0	40				
Desired	0.0	4				
Min	0.0	0.4				
Note	Changing exhaust the command value. This stop. Condition for re	ottle valve position to the test can be effective during engine lease : Key off				
Measurem	ent Mode					
Not mea	suring N	easurement time(sec) 📥				
 Measuri 	 Measuring(graph display) 					
	Set	Cancel				

■DPF Active Regeneration

Perform the DPF regeneration.

In order to perform the DPF regeneration, the conditions mentioned in the "Notes" below should be satisfied.

MARTASSIST-Direct									
$File(E) View(\underline{V}) Operation(\underline{Q}) Tool(\underline{I}) Help(\underline{H})$									
🔊 🔊 Diagnostics 🗐	🔊 🔊 Diagnostics 🗐 🍖 🗧 TRAINING Active Code								
MenuToolBar									
ECU Information	Manual	Stop button	Run button	Description	ENG Run	Mea			
Diagnostic Codes	0	[STOP]	[RUN]	Direct Engine RPM Control	req				
Freeze Frame Data	0	[STOP]	[RUN]	Direct EGR Valve Control	not				
Disensatis Tests	0	[STOP]	[RUN]	Injector Test	-				
Diagnostic Tests	0	[STOP]	[RUN]	Intake Throttle Position Control	not				
Pulse/Analog etc	0	[STOP]	[RUN]	Exhaust Throttle Position Control	not				
Digital IN etc	0	[STOP]	(RUN)	DPF Active Regeneration	req				
Digital OUT									
Active Control									
Active Control(Graph									
Hysteresis Measure									
Data Logging	•		m			۲			
Historical Data	Comment					×			
ECU Structures	Notes : Operate	DPF regenerati	on in commande	d mode. 1:assist regeneration 2:reset rege	neration	÷			
Baudrate : 500k Engine T	Type(Vehic	le Manufacture):	4TNV88C-K / Er	gine S/N:12345	OFF	LINE			

Set the command mode to the action you wish to perform.

1. Assist regeneration, 2. Reset regeneration, 3. Stationary regeneration, 4. Recovery regeneration

🎁 Data Set[Trainin	g]	
Deta Name	DPF Active Regene	eration
Measured		
Max	25	5 100 🔺 💌
Desired		0 10 🔺 💌
Min		0 1
		Q
Note	Operate DPF regen 1:assist regenerati 3:stationary regene Below condition is mode. i : Coolant to degree or passed of	neration in commanded mode. on 2:reset regeneration eration 4:recovery regeneration. / required for each regeneration emperature is greater than 60
Measurem	ent Mode	
Not mea	isuring	Measurement time(sec) 📥
© Measuri	ng(graph display)	10
	Set	Cancel

Regeneration is completed automatically or click "STOP" to stop the regeneration manually.

When the regeneration process is stopped before completion, the active regeneration may not be completed successfully.

MARTASSIST-Direct									
File(<u>F</u>) View(<u>V</u>) Opera	File(<u>E</u>) View(<u>V</u>) Operation(<u>Q</u>) Tool(<u>I</u>) Help(<u>H</u>)								
🔝 🔝 Diagnostics 🗐	🔊 🛜 Diagnostics 🗐 🖶 📼 TRAINING Active Code								
MenuToolBar # ×	MenuToolBar								
ECU Information	Manual	Stop button	Run button	Description	ENG Run	Mea			
Diagnostic Codes	0	[STOP]	[RUN]	Direct Engine RPM Control	req				
Freeze Frame Data	0	[STOP]	[RUN]	Direct EGR Valve Control	not				
Diagnostia Tasta	0	[STOP]	[RUN]	Injector Test	5. .				
Diagnostic Tests	0	[STOP]	[RUN]	Intake Throttle Position Control	not				
Pulse/Analog etc	0	[STOP]	[RUN]	Exhaust Throttle Position Control	not	· · · · · ·			
Digital IN etc	۲	[STOP]	[RUN]	DPF Active Regeneration	req				
Digital OUT									
Active Control									
Active Control(Graph									
Hysteresis Measure									
Data Logging			m			۰.			
Historical Data	Comment					₽×			
ECU Structures	Notes : Operate	DPF regenerati	on in commande	d mode. 1:assist regeneration 2:reset regen	eration				
Baudrate : 500k Engine	Type(Vehic	le Manufacture):	4TNV88C-K / Er	ngine S/N:12345	OFF	LINE			

■Fuel Pump Learning

When replacing the supply pump using the DENSO CR System, it is necessary to perform fuel pump learning using forced operation after replacement.

Also, when replacing the ECU for CR for the 4TNV94HT-Z engine type or when replacing the ECU for CR with the management ECU at the same time, fuel pump learning after replacement is necessary.

In order to perform the above, the conditions mentioned in the "Notes" below must be satisfied.

SMARTASSIST-Direct				and the second sec			×
File(F) View(V) Tool(T) He	elp(H)						
🔊 🔝 Diagnostics 🖪 🔹 📼	ON LINE Activ	e Code					
MenuToolBar 6	×						
ECU Information	Diagnostic Te	ests - Active Contro	bl				
Diagnostic Codes	Manual	Stop button	Run button	Description	ENG Run	Measured	De
		[STOP]	[RUN]	DIRECT ENGINE RPM CONTROL	req	0	
Freeze Frame Data	0	[STOP]	[RUN]	Fuel Pump Learning Restart Function			
Diagnostic Tests	0	[STOP]	[RUN]	DIRECT EGR VALVE CONTROL	not		
Pulse/Analog etc		[STOP]	[RUN]	ENGINE LOAD MONITOR OUTPUT	not		
Digital IN etc		[STOP]	[RUN]	Injector Test			
Digital OUT	i l						
Active Control	í l						
Active Control(Graph)							
Hysteresis Measure							
Data Logging				n			
Historical Data							
ECU Structures	Comment						8>
System Settings	Notes :						
	·						
						_	
Baudrate : 500k Type:4TNV94	4HT-ZXSRA / SN	o:00117				ONL	INE

After completing training, check the value displayed in the measurement value field and if other than "2", check the training parameters, and perform training again.

■Aqueous Urea Injection Test (4TNV94FHT)

4TNV94FHT which equips SCR with FT4 can perform aqueous urea injection test.

Change ECU type to "SCR" from forced operation screen.

Select Aqueous Urea injection test then click [RUN]. Password authentication screen is displayed.

SMARTASSIST-Direct				Comparison and				-		-	- • ×
File(\underline{F}) View(\underline{V}) Operation(\underline{O})	$Tool(\underline{T})$	Help(<u>H</u>)									
🔊 🔊 Diagnostics 🗗 🖶 📼 C	N LINE	Active Code									
MenuToolBar # ×	SCR			+ Diag	nostic T	Tests - A	ctive Co	ontrol			
ECU Information	Manua	Stop button	Run button	Description	NG Ru	leasure	Desired	Unit	Graph	ECU	CID
Diagnostic Codes	0	[STOP]	[RUN]	Dosing Active Test	-	0.00	0	g		SCR	64482
Freeze Frame Data	0	[STOP]	[RUN]	Urea Tank Heating Valve Ac	-	0	0	-		SCR	64781
Diagnostic Tests											
Pulse/Analog etc											
Digital IN etc			Password	authentication		L	×				
Digital OUT											
Active Control			Enter y	our password.							
Active Control(Graph)			User I	0							
Hysteresis Measure			Passw	ord							
Data Logging				Set Cancel							
Historical Data											
ECU Structures					_	_					
System Settings											
Comment MenuToolBar	_										
Baudrate : 250k Engine Type(Ve	hicle Ma	nufacture):4T	NV94FHT-N	IJSL / Engine S/N:000101							ONLINE

Enter your password, and click "set" to open Data Set screen.

Adjust the directive value with the \mathbf{V} / \mathbf{A} . Minimum unit is 1.

After setting the directive value, click "Set", and the directive value setting is confirmed.

🗊 Data Set	
Deta Name Dosing Active Tes	t
Measured	
Max	3 100
Desired	0 10 🔺 💌
Min	1 1 🔺 🔻
	×
Note	
Measurement Mode	
Not measuring	Measurement time(sec) 📥
Measuring(graph display)	10
Set	Cancel

■Aqueous Urea Tank Heating Valve Forced Operation (4TNV94FHT)

4TNV94FHT which equips SCR with FT4 can perform forcing operation of aqueous urea tank heating valve.

Change ECU type to "SCR" from forced operation screen.

Select Tank Heating Valve Forced Operation, and then click [RUN]. Password authentication screen is displayed.

SMARTASSIST-Direct	1 TH	Commercia R			19 10-	100	E.	n - san - Bar	
File(<u>F</u>) View(<u>V</u>) Operation(<u>O</u>)	Tool(\underline{T}) Help(\underline{H})								
🔊 🔊 Diagnostics 🗇 🖢 🖸	ON LINE Active Code								
MenuToolBar	SCR		- Diag	gnostic 1	Tests - Ac	tive Co	ntrol		
ECU Information	Manua Stop buttor F	Run button	Description	NG Ru	easure)	esire	Unit	Grapt ECU	CID
Diagnostic Codes	O [STOP]	[RUN] Dosi	ng Active Test	-	0.00	0	g	SCR	64482
Freeze Frame Data	(STOP)	[RUN] Urea	Tank Heating Valve Ac	-	0	0	-	SCR	64781
Diagnostic Tests									
Pulse/Analog etc									
Digital IN etc		Password authen	tication			×			
Digital OUT									
Active Control		Enter your p	assword.						
Active Control(Graph)		User ID							
Hysteresis Measure		Password							
Data Logging			Set Cancel						
Historical Data									
ECU Structures				_					
System Settings									
Comment MenuToolBar				_	_		A 40 %		14:29

Enter your password, and click "set" to open Data Set screen.

Adjust the directive value with the 🔽 / 🔺. Minimum unit is 1.

After setting the directive value, click "Set", and the directive value setting is confirmed.

🗊 Data Set	
Deta Name Dosing Active Te	st
Measured	
Max	3 100 🔺 💌
Desired	0 10 🔺 💌
Min	
	· · ·
Note	
Measurement Mode	
Not measuring	Measurement time(sec) 📥
 Measuring(graph display) 	10
Se	t Cancel

■Data logging during active control

Detailed explanation of data logging is given in chapter 6.6. However, the data can be logged during active control on CR engines compliant with the Tier 4 exhaust emission regulation shown in the table below.

Select "Data Monitor" during active control.

🔊 🔊 Diagnostics 🖪 🔹 🗖	N LINE Active	e Code				
enuToolBar & ×						
ECU Information	Diagnostic Te:	sts - Active Contro	d			
Diagnostic Codes	Manual	Stop button	Run button	Description	ENG Run	Measured
Englissie codes	۲	[STOP]	[RUN]	DIRECT ENGINE RPM CONTROL	req	0
Freeze Frame Data	0	[STOP]	[RUN]	Fuel Pump Learning Restart Function	940	
Diagnostic Tests	0	[STOP]	[RUN]	DIRECT EGR VALVE CONTROL	not	
Pulse/Analog etc	0	[STOP]	[RUN]	ENGINE LOAD MONITOR OUTPUT	not	
Digital IN etc	۲	[STOP]	[RUN]	Injector Test	-	
Digital OUT						
Active Control						
Active Control Active Control(Graph)						
Active Control Active Control(Graph) Hysteresis Measure						
Active Control Active Control(Graph) Hysteresis Measure Data Logging	4					
Active Control Active Control(Graph) Hysteresis Measure Data Logging Historical Data	٢			,		
Active Control Active Control(Graph) Hysteresis Measure Data Logging Historical Data ECI I Structures	Comment					
Active Control Active Control(Graph) Hysteresis Measure Data Logging Historical Data ECU Structures System Settings	Comment Notes : Output Test					
Active Control Active Control(Graph) Hysteresis Measure Data Logging Historical Data ECU Structures System Settings	Comment Notes : Output Test					

When "Data Monitor" is selected, you are asked to stop active control. Click "No" to log the data during active control.


Only 1s can be selected for the sample rate setting during active control.

Other procedures for data logging are the same as the normal operation.

SMARTASSIST-Direct	and the second se					
File(F) View(V) Operation(C	D) Tool(T) Help(H)					
🔊 🔊 Diagnostics 🗃 🕭 📼	ON LINE Active Code					
VenuToolBar #	×					
ECU Information	 Data Logging - Data Monitor 					
Diagnostic Codes	Description	Value	Max	M	Manual Trigger	
Bildgillostic Codes	2483:ENGINE RUN HOURS(unit:h)(ERH)					
Freeze Frame Data	63769:REQUEST ENGINE SPEED(RES)			E	Select Diagnostics	
Diagnostic Tests	63774:REQUEST ENGINE SPEED(FINAL)(ERSF)				AnySetting	-
Pulse/Analog etc	63770:ENGINE SPEED(ES)					
	63766:ENGINE LOAD RATE(Gross)(ELRG)				Trigger Setting	
Digital IN etc	63784:ACTUAL EGR VALVE CONTROL VALUE(AEVCV)				Trigger OFF Data	â
Digital OUT	64368:Total injection quantity(QFIN)				Level 0 Type 5	
Active Control	110:ENGINE COOLANT TEMPERATURE(ECT)				Pre-tridder 50 Strade	30000 -
	1136:ECU TEMPERATURE(EET)				Logging status	
Active Control(Graph)	158:BATTERY VOLTAGE(BV)				Status	<u>^</u>
Hysteresis Measure	63780:Engine Start State Status(ESSS)				Counter	0
Data Logging	63559:DROOP MODE SW(DMS)				Mon.Start	-
Data 2099nig	(m	1		,	Run 00:00:00.000	
Data Monitor	Comment					e x
Recorded Data	oonment					
Trend Graph						
Historical Data						
ECU Structures						
Baudrate : 500k Type:4TNV94	HT-ZXSRA / SNo:00117					ONLINE



Additional Descriptions

When clicking another tab, a confirmation dialog for the end of the active control is displayed.

- **1** Yes : Stop all Items and move to another tab.
- 2 No : Keep all current executed statuses and move to another tab.
- * After switching the tab, the digital out will remain displayed in light blue.



When necessary, save as CSV, save a screenshot or make a printout of the screen.

- 🚺 鼲 : Save the ECU's screen display data. (Refer to [7. Error Diagnostic Data Save and Display Functions])
- 2 🔁 : Print the screen. (Refer to [6.2.2])
- 3 🔚 : Save a screenshot in BMP format. (Refer to [6.2.3])
- Image: Save the screen data in CSV format. (Refer to [6.2.4])

	d ¥)•(×+ ∓	ನ್ಲೇಂಗ್ರಮ್ಮ ಮಾರ್ ಮ್ಯಾಗ್ ಮ್ಯಾಗ್ ಮ್ಯಾಗ್	8 == 75.05	20	151026_170104_SYS
211	H13	 √ (* f_x) 	u 13/4 7/177		
14	A	В	С	D	E
1			4TNV94HT-ZXSRA	117	20151026 test
2	System Group	Detail	Value	Unit	ECU
3	Engine	Type	4TNV94HT-ZXSRA		Engine
4	Engine	Rated RPM	2200	r/min	Engine
5	Engine	SNo	117		Engine
6	Engine	Manufacturing Test Date	110121		Engine
7	Engine	Run Hr	0	h	Engine
8	Pump	Pump Learning Completion Time	0	h	Engine
9	ECU	Part No.	129978-75520		Engine
0	ECU	SNo.	9960900888		Engine

The graph measured during active control is overwritten when other Items are measured, so save the graph screen as bitmap or save the data in CSV format.

Be careful: The graph is deleted when other Items are executed in active control.

- 1 🔚 : Save a screenshot in BMP format. (Refer to [6.2.3])
- 2 📄 : Save the screen data in CSV format. (Refer to [6.2.4])



If the communication with the ECU is interrupted and active control is performed, the below dialog box is displayed.

1 🔚 : The communication with the ECU starts.



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6.5.10 Reference material "Pulse/Analog Input/Output" (TNV series compatible with Engine Tier4)

■DPF PM deposition amount check

When history data from the old ECU was not carried over at time of ECU replacement, perform a DPF PM deposition amount check. Connect to the SA-D, select the pulse/analog input/output diagnosis test, and check the DPF PM deposition concentration (P method) physical value data.



6.6 Data Logging

From the submenu of the graph display, you can select the data monitor that displays logged data in real-time or save data. The logged data is gathered by a tool that can determine defects and analyze the operating status during operation of the product. The logged data contains freeze frame data (Refer to [6.4]) and arbitrarily set optional data. There is also a trigger setting that makes saving data easier.

6.6.1 Data Monitor

The measurement data of the ECU sensor and the control data are received at a sample interval set in advance (minimum 0.1 sec). A trigger that starts the recording of the data can be set.

Operation Tool Bar

- 1 🔁 : Print the screen. (Refer to [6.2.2])
- 2 1 Save a screenshot in BMP format. (Refer to [6.2.3])
- Save the measured data. For the display of the saved data, refer to [7. Error Diagnostic Data Save and Display Functions].
- Image: The receiving of data starts. (Data that has not been saved according to [6.5.6 Saving the Measured Data] is overwritten and lost.)
- **15 [1]** : Manually stop the receiving of data.
- Settings of the option data that run the data monitor. When clicking, the option data set subwindow is displayed and the settings can be changed.
- Set the trigger conditions (trigger on/off, data selection, level (trigger value) selection, trigger type), number of delays and number of saved data sets. When clicking, a trigger setting subwindow is displayed and the settings can be changed.
- B I let the sampling rate. When clicking, a sampling rate set subwindow is displayed and the settings can be changed.
- Set the data that is displayed in the main box. When clicking, a data set sub-window is displayed and the settings can be changed.

Main Box

16

- **Description** : Display the name of the logged data.
- **11** Value : Display the measurement values.
- 12 Max : Maximum value
- 13 Min : Minimum value
- 14 Unit : Unit
- Notes
 : Annotation box
 - **ECU** : Display the ECU/controller that controls the devices. (Only if multiple ECU are connected.)



Figure 6-18 Data Monitor Screen

Additional Information Box

Trigger Setting

Displays the trigger setting information.

- **Manual Trigger** : Click to manually apply the trigger.
- 2 Select Diagnostics : Package data sets with the most appropriate settings sorted per event
- **Trigger** : Display the status of the trigger setting.
- **Level** : Display the values of the trigger setting.
- **5 Pre-trigger** : Display the number of data sets from start of memorization to the trigger event.
- **Data** : Display the data abbreviations of the trigger setting.
- **Type** : Display the set trigger type (leading/trailing).
- **B Storage** : Display the number of data sets memorized. (Counting as one set the data collected at a given time.)

Logging status

Displays the data logging status.

- Status : Display the measurement status. "Data saving (awaiting trigger)", "Data saving in progress", "Data saving complete"
- **Counter** : Display the number of collected data sets.
- **Mon. Start** : Display the time when the monitor was started.
- **Run** : Display the time passed since start of measurement.
- **Rest** : Display the time left until end of measurement.

Sample Rate Setting

Displays the current settings.

- Mode : Displays "discharge" if the sampling rate is set to 100 msec; displays "polling" for all other sampling rates.
- **IS** Interval : Displays the sampling interval.



Figure 6-19 Data Monitor Screen

Data Select Subwindow

The Items that display data and the display order can be set arbitrarily. Click the solution on the operation tool bar to make the settings. You can select and register data from the arbitrarily displayed data that was registered before the event and is separated by category except freeze frame data (Refer to [6.4]). For details, refer to [Data Select Window].

Option Data Set Subwindow

You can select and register data from the arbitrarily displayed data that was registered before the event and is separated by category except freeze frame data.

Click the 🗊 button of the operation tool bar to open the selection screen.

1 Data: List all available data.

Image: A state of the select data for display.

3 Set data: The data displayed in the main box.

- **Set** : Confirm the entry.
- **5 Cancel** : Close the entry screen.

Point

Data monitor Items	Screen display
• Freeze Frame Data	Data Items selected in the Data Set win-
Optional data	dow on the left.



Figure 6-20 Option Data Set Subwindow

• Trigger Setting Subwindow

5

Click the we button on the operation tool bar to change the trigger setting.

- **1** Trigger (ON) : Activate the trigger.
- **2** Data Select : Select the trigger data.

3 Level : Set the trigger value.

4 Type : Set the set trigger type (leading/trailing).

Leading ___: Start saving if the value of the selected data exceeds the trigger value.

Trailing \mathbb{k} : Start saving if the value of the selected data falls under the trigger value.

- Delay : Display the number of data sets from start of memorization to the trigger event.
- **Storage** : Set the number of data sets memorized. (Counting as one set the complete data monitor Items at a given time.)
- **Set** : Confirm the entry.
- 8 **Cancel** : Close the entry screen.



Figure 6-21 Trigger Setting Subwindow

• Sample Rate Setting Subwindow

Click the W button on the operation tool bar to change the sample rate setting.

- **Select** : Add a checkmark to the button to select the sampling rate.
- When inserting a checkmark to the desired setting, the sampling rate is adjustable in increments of 1, 10, and 100.
- 3 Unit : Select the unit.
- 4 Set : Confirm the entry.

5

Cancel : Close the entry screen.



Figure 6-22 Sample Rate Setting Subwindow

6.6.2 Overview of the Data Sampling Operation

* This description applies to the TNV series engine.

1 Select the data you want to display.

		; /	ata set butto	on
SMARTASSIST	-Direct			
File(<u>F</u>) Vi	ew(<u>V</u>) Op	eration(O)	Tool(<u>T</u>)	Help(<u>H</u>)
		7, 5, 5, 5,	×#	

* If you wish to monitor Items that are not displayed on this list, go to 2. Option Settings.

No	Description		Descriptio	n CID	Acronym	ECU Name
25	ECU MAIN RELAY					
26	INTAKE AIR HEATER RELAY1					
27	PRE-HEATER Lamp	(C)				
28	Engine Warning Indicator					
29	ENGINE STARTER Interlock REL					
30	ECO MODE Lamp					
31	EGR Step MOTOR(A)					
32	EGR STEP MOTOR(B)					
33	EGR STEP MOTOR(C)					
34	EGR STEP MOTOR(D)					
35	CSD SOLENOID VALVE					
36	FUEL RACK ACTUATOR RELAY					1 contractions
•				Defaul	t Set	Cancel

Option Settings

		Option set buttor	۱	
I SMARTAS	SIST-Direct			
File(<u>F</u>)	View(V)	Operation(O)	Tool(<u>T</u>)	Help(<u>H</u>)
			×	

Description CID Acronym Accelerator Pedal Position 91 APP MINIMUM RACK POSITION 63758 RMIN MAXIMUM RACK POSITION 63759 RMAX DLE RACK POSITION 63760 RIDLE RACK CONTROL STATUS 63765 RCS REVERSE DROOP CORRECTION VALUE 63771 ROCV DROOP CORRECTION VALUE 63775 DCV ENGINE ACCELERATION FLAG 63777 EAF Engine Stop Warning Status 63779 ESWS REQUEST EGR VALVE CONTROL VALUE 63777 EAF Engine Stop Warning Status 63178 REVCV Percent LOAD at current Speed 92 %LOAD SENSOR SOURCE VOLTAGE 636417 SSV ACK ACTUATOR CURRENT 6318 RAC CAMSHAFT ROTATION SPEED 63649 CMRS SOVERNOR CONTROL P-GAIN 63748 GCDG GOVERNOR CONTROL D-GAIN 63748 GCDG	Operative SetTerming CID Accordym CDEscription CID Acconym Accelerator Pedial Position 91 APP MINIMUM RACK POSITION 63758 RMIN MXXIMUM RACK POSITION 63760 RIDLE RACK POSITION 63760 RIDLE RACK CONTROL STATUS 63765 RCS REVERSE DROOP CORRECTION VALUE 63777 EAF ENGINE ACCELERATION FLAG 63777 EAF ENGINE ACCELERATION FLAG 63777 EAF ENGINE DECELERATION FLAG 63778 ESWS REQUEST EGR VALVE CONTROL VALUE 63617 SSV RACK ACTUATOR CURRENT 63618 RAC CAMSHAFT ROTATION SPEED 63649 CMRS AUXILLARY ROTATION SPEED SENSOR 63560 AUXRSS GOVERNOR CONTROL P-GAIN 63748 GCDG GOVERNOR CONTROL D-GAIN 63748 GCDG			Items f	for d	lata logg	ging (op	otion iten	ו)		
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Description CID Acronym Accelerator Pedal Position 91 APP MINIMUM RACK POSITION 63758 RMIN MAXIMUM RACK POSITION 63759 RMAX DLE RACK POSITION 63760 RIDLE ACK CONTROL STATUS 63765 RCS REVERSE DROOP CORRECTION VALUE 63771 RDCV DROOP CORRECTION VALUE 63775 DCV ENGINE ACCELERATION FLAG 63777 EAF ENGINE DECELERATION FLAG 63777 EAF ENGINE DECELERATION FLAG 63777 ESWS REQUEST EGR VALVE CONTROL VALUE 63785 REVCV Percent LOAD at current Speed 92 %LOAD SENSOR SOURCE VOLTAGE 63617 SSV RACK ACTUATOR CURRENT 63649 CMRS AUXILLARY ROTATION SPEED 63649 AMRS AUXILLARY ROTATION SPEED SENSOR 63650 AUXRSS SOVERNOR CONTROL P-GAIN 63748 GCDG SOVERNOR CONTROL D-GAIN 63748 GCDG	Description CID Accorym Accelerator Pedal Position 91 APP MINIMUM RACK POSITION 63758 RMIN MAXIMUM RACK POSITION 63759 RMAX IDLE RACK POSITION 63760 RIDLE RACK CONTROL STATUS 63765 RCS REVERSE DROOP CORRECTION VALUE 63771 RDCV DROOP CORRECTION VALUE 63775 DCV ENGINE ACCELERATION FLAG 63777 EAF Engine Stop Warning Status 63770 SENVS REQUEST EGR VALVE CONTROL VALUE 63778 REVCV Percent LOAD at current Speed 92 %LOAD SENSOR SOURCE VOLTAGE 63617 SV RACK ACTUATOR CURRENT 63618 RAC CAMSHAFT ROTATION SPEED 63640 CMRS AUXILIARY ROTATION SPEED SENSOR 63650 AUXRSS GOVERNOR CONTROL P-GAIN 63748 GCDG										
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Percent LOAD at current Speed 92 %LOAD SENSOR SOURCE VOLTAGE 63617 SSV RACK ACTUATOR CURRENT 63618 RAC CAMSHAFT ROTATION SPEED 63649 CMRS AUXILLARY ROTATION SPEED SENSOR 63650 AUXRSS GOVERNOR CONTROL P-GAIN 63746 GCPG GOVERNOR CONTROL I-GAIN 63748 GCDG	Percent LOAD at current Speed 92 %LOAD SENSOR SOURCE VOLTAGE 63617 SSV RACK ACTUATOR CURRENT 63618 RAC CAMSHAFT ROTATION SPEED 63649 CMRS AUXILIARY ROTATION SPEED SENSOR 63650 AUXRSS GOVERNOR CONTROL P-GAIN 63746 GCPG GOVERNOR CONTROL I-GAIN 63748 GCDG	REQUEST EGR VALVE CONTROL VALUE	63785	REVCV							
SENSOR SOURCE VOLTAGE 63617 SSV RACK ACTUATOR CURRENT 63618 RAC CAMSHAFT ROTATION SPEED 63649 CMRS AUXILIARY ROTATION SPEED SENSOR 63650 AUXRSS GOVERNOR CONTROL P-GAIN 63746 GCPG GOVERNOR CONTROL I-GAIN 63748 GCDG	SENSOR SOURCE VOLTAGE 63617 SSV RACK ACTUATOR CURRENT 63618 RAC CAMSHAFT ROTATION SPEED 63649 CMRS AUXILIARY ROTATION SPEED SENSOR 63650 AUXRSS GOVERNOR CONTROL P-GAIN 63746 GCPG GOVERNOR CONTROL I-GAIN 63747 GCIG GOVERNOR CONTROL D-GAIN 63748 GCDG	Percent LOAD at current Speed	92	%LOAD							
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CAMSHAFT ROTATION SPEED 63649 CMRS AUXILIARY ROTATION SPEED SENSOR 63650 AUXRSS GOVERNOR CONTROL P-GAIN 63746 GCPG GOVERNOR CONTROL I-GAIN 63747 GCIG GOVERNOR CONTROL D-GAIN 63748 GCDG	CAMSHAFT ROTATION SPEED 63649 CMRS AUXILARY ROTATION SPEED SENSOR 63650 AUXRSS GOVERNOR CONTROL P-GAIN 63746 GCPG GOVERNOR CONTROL I-GAIN 63747 GCIG GOVERNOR CONTROL D-GAIN 63748 GCDG	RACK ACTUATOR CURRENT	63618	RAC							
AUXILIARY ROTATION SPEED SENSOR 63650 AUXRSS GOVERNOR CONTROL P-GAIN 63746 GCPG GOVERNOR CONTROL I-GAIN 63747 GCIG GOVERNOR CONTROL D-GAIN 63748 GCDG	AUXILIARY ROTATION SPEED SENSOR 63650 AUXRSS GOVERNOR CONTROL P-GAIN 63746 GCPG GOVERNOR CONTROL I-GAIN 63747 GCIG GOVERNOR CONTROL D-GAIN 63748 GCDG	CAMSHAFT ROTATION SPEED	63649	CMRS							
GOVERNOR CONTROL P-GAIN 63746 GCPG GOVERNOR CONTROL I-GAIN 63747 GCIG GOVERNOR CONTROL D-GAIN 63748 GCDG	GOVERNOR CONTROL P-GAIN 63746 GCPG GOVERNOR CONTROL I-GAIN 63747 GCIG GOVERNOR CONTROL D-GAIN 63748 GCDG	AUXILIARY ROTATION SPEED SENSOR	63650	AUXRSS							
GOVERNOR CONTROL I-GAIN 63747 GCIG GOVERNOR CONTROL D-GAIN 63748 GCDG	GOVERNOR CONTROL I-GAIN 63747 GCIG GOVERNOR CONTROL D-GAIN 63748 GCDG	GOVERNOR CONTROL P-GAIN	63746	GCPG							
GOVERNOR CONTROL D-GAIN 63748 GCDG	GOVERNOR CONTROL D-GAIN 63748 GCDG	GOVERNOR CONTROL I-GAIN	63747	GCIG							
		GOVERNOR CONTROL D-GAIN	63748	GCDG							
		GOVERNOR CONTROL I-GAIN GOVERNOR CONTROL D-GAIN	63747 63748	GCIG GCDG							
									C	Set C	ancel

- **3** Set the sampling rate as necessary.
- * Normally, a change is not necessary.

		Sar	nple Rate	Set button
			_/	
SMARTAS	SIST-Direct			
File(<u>F</u>)	View(<u>V</u>)	Operatio	on(<u>O</u>)	Tool(<u>T</u>)
56		3, 5, 5,		×

I Sample Ra	ate Set[Training]					
100	ms (Indicate and save)					
© 1s © 10s	 1s Data is saved at specified intervals. It is displayed every seconds. 					
© 60s						
	100 10 1 MIN MAX					
© 1	🔺 📥 💿 sec 🛛 1 600 (10min)					
	💌 💌 💌 omin 1 60 (1hour)					
Q., .	••••••••••••••••••••••••••••••••••••••					
	Set Cancel					

Note • The standard is 100 msec.

ullet On ECU that do not support a change, the other values are grayed-out.

4 Set the trigger.

A change is not necessary if the monitor was started by manual trigger.

	Trigger Set button
SMARTASSIST-Direct	
File(<u>F</u>) View(<u>V</u>) Operation(<u>O</u>) Tool(<u>T</u>) Help(<u>H</u>)
Check	Select the trigger
Trigger Set[Training]	
Trigger(ON)	
Data Select	•
	100 10 1
Level	
	المتعادية والألك الكالك

Trigger Set[Traini	ng]	
Trigger(ON	1)	
Data Select		•
Level	ERH :ENGINE RUN HOURS(unit:h):h RES :REQUEST ENGINE SPEED:r/min ERSF :REQUEST ENGINE SPEED(FINAL):r/min ES :ENGINE SPEED :r/min	
Туре	ELRG :ENGINE LOAD RATE(Gross):% AEVCV:ACTUAL EGR VALVENTROL VALUE: REQRP:REQUEST RACK POSITION: ACTRP:ACTUAL RACK POSITION:	

Trigger Set[Training]	a a X
Trigger(ON)	
Data Select RES :R	EQUEST ENGINE SPEED:r/min -
	100 10 1
Level	
Туре	Ĩ°↓
Select the trigger value	level). 100 10 1
Delay	50 🔺 🔺

5 Description of the trigger setting

[Trigger Set[Training]	0	
	Trigger(ON)		
	Data Select ES	:ENGINE SPEED :r/min	•
	1	100 10 1	
	Level	1500	
			1.1.1.1
	Туре	<u>● ↓</u> · <u>↓</u>	
		100 10 1	
The trigger a	actuates when the	50 🔺 📥	
engine spee	d is 1500 or more.		C. C. A. D. T.
		100 10 1	
	Storage	30000	
			· · · · · · · · · · · · · · · · · · ·
		Set Cancel	

In trigger mode, the values before the trigger is applied can be saved.

* Normally, a change is not necessary.

Change if necessary.

Trigger Set[Training]	
Trigger(ON)	
Data Select	•]
	100 10 1
Level	Select the number of points saved
	before the trigger actuates.
Туре	●
A de la companya de la compa	
Delay	
	100 10 1
Storage	500
	Set Cancel

Example: If the sampling time is 100 msec, $50 \times 100 = 5000$ msec (5 sec), thus the values are saved from 5 seconds before the trigger is applied.

Trigger Set[Training]	
Trigger(ON)	
Data Select	•
	100 10 1
Level	
Туре	৽৴৾৽৴
	100 10 1
Delay	Select the save volume. (default is 500)
Storage	
	Set Cancel

Example: If the sampling time is 100 msec, 500 x 100 = 50000 msec (50 sec), thus the values are saved from 50 seconds before the trigger is applied.

6 Click the button to start the monitor.

SMARTASSIST-Direct				
File(F) View(V) Operation(O)	Tool(T) Help(H)			
🔊 🔊 Diagnostics 🖪 🔹 📼	ON LINE Active Code			
MenuToolBar # ×				
ECU Information	Data Logging - Data Monitor			
Diagnostic Codes	Description	Value		Manual Trigger
	91:Accelerator Pedal Position(APP)			Select Diagnostics
Freeze Frame Data	63766:Engine Load Rate(Gross)(ELRG)			AnySetting -
Diagnostic Tests	63770:Engine Speed(ES)			
Data Logging	63774:Request Engine Speed(Final)(ERSF)			Trigger Setting
	64368:Total Injection Quantity(QFIN)			r Trigger ON Data ES
Data Monitor	64362:Final Maximum Injection Quantity(QMXFIN)			r Level 100 Type 🗗
Recorded Data	64055:Engine Control Status(ENGST)			Pre-trigger 150 Strage 30000
Trend Graph	64150:DPF PM Accumulation Density_P(DPFPMADP)			Logging status
Hold Croph	64145:Actual High Pressure Pump Current(AHPPC)			Status
Historical Data	64146:Target High Pressure Pump Current(THPPC)			Counter 0
ECU Structures				Mon.Start
System Settings				Run 00:00:00.000
				Rest 08:20:00.000
				Sample Rate setting
				Mode Polling
				letenual 1[sec]
	(*) · · · · · · · · · · · · · · · · · ·			

SMARTASSIST-Direct		Carlana Constant	100		
File(<u>F</u>) View(<u>V</u>) Opera	ation(<u>O</u>) Tool(<u>T</u>) Help(<u>H</u>)				
🔊 🔝 Diagnostics 🖪	TRAINING Active Code				
MenuToolBar	Data Logging - Data Monitor	Data logging o	lisplay only	Not rec	ording(Waiting for a trigger
ECU Information	Description	Value	Max M		Manual Trigger
Diagnostic Codes	51:Actual Intake Throttle Position(AITS)	0.0	0.0	Please	push a [Manual Trigger]
Freeze Frame Data	247:Total Engine Hours(TEHR)	0.00	0.00	in order	to save.
	64277:Application Switch 2(APP-IP2)	OFF	OFF	Select L	Diagnostics
Diagnostic lests	64278:Application Switch 3(APP-IP3)	OFF	OFF	AnySet	ting *
Data Logging	64279:Application Switch 4(APP-IP4)	OFF	OFF	Trigger	Setting
Data Monitor	64280:Application Switch 5(APP-IP5)	OFF	OFF	Trigger	OFF Data
Recorded Data	64281:Application Switch 6(APP-IP6)	OFF	OFF	Level	0 Туре 🦨 🛫
	64282:Application Switch 7(APP-IP7)	OFF	OFF		
Trend Graph	64283:Application Switch 8(APP-IP8)	OFF	OFF	Logging	Status
Historical Data					display only. Not
ECU Structures				Status	recording(Waiting
System Settings	• III		•		for a trigger)
System Settings	Comment				5
Baudrate : 500k Engine	Type(Vehicle Manufacture):4TNV88C-K / Eng	ine S/N:12345			OFFLINE

* Click the Manual Trigger button if necessary.

7 If the trigger is applied, "Logging to memory" is displayed.

	ON LINE ACTIVE CODE							
fenu loolBar # >	Data Lassing Data Masitas						Landing	
ECU Information	Data Logging - Data Monitor	Watter	1978	_	-	Participant - 192	Logging	to mem
Disgnastia Cadas	Description	Value	Max	Min		Manual Tri	gger	
Diagnostic Codes	2483:ENGINE RUN HOURS(unit:h)(ERH)	0	0		Select Di	agnostics		
Freeze Frame Data	63769:REQUEST ENGINE SPEED(RES)	1500	1500	150	AnySettir	ng		-
Diagnostic Tests	63774:REQUEST ENGINE SPEED(FINAL)(ERSF)	1500	1500	150				
Diagnoone reeks	63770:ENGINE SPEED(ES)	0	0		Trigger S	etting		
Data Logging	63766:ENGINE LOAD RATE(Gross)(ELRG)	0	0		Trigger	ON Data	ES	-
Data Monitor	63784:ACTUAL EGR VALVE CONTROL VALUE(AEVCV)	0	0		Level	100 Type	£	
Reported Data	64368:Total injection quantity(QFIN)	0.0	0.0	0.	Pre-trinn	er 150 Strene		30000 -
Recorded Data	110:ENGINE COOLANT TEMPERATURE(ECT)	30	30	3	Logging s	j status		
Trend Graph	1136:ECU TEMPERATURE(EET)	29.00	29.00	29.0	ANNO	Data logging o	display only	/. Not
Historical Data	158:BATTERY VOLTAGE(BV)	11.85	11.85	11.8	Status	recording(VVa	iting for a	
Lifetime Data	63780:Engine Start State Status(ESSS)	0	0		Counter	uigger)		0
Lifetime Data	63559:DROOP MODE SW(DMS)	OFF	OFF	OF	Man Star	10/06 10:25-5	e	
Map Table	63561:RMAX SELECT SW1(RSS1)	OFF	OFF	OF	Mon.Star	10/20 19.35.5	00	
Log Data	63554:EMERGENCY STOP SW(EMSS)	OFF	OFF	OF	Run	00:00:05.000		
FOLISHING		~==	~	-5	Sample R	ate setting		
ECO Structures					- Campie I			
	Comment							

8 Click the button 🔳 to end the monitor.

Diagnostics	ON LINE Active Code							
enuToolBar	# ×							
ECU Information	Data Logging - Data Monitor						Logging	to men
Loo momunon	Description	Value	Max	Min		Manual Tr	igger	
Diagnostic Codes	2483:ENGINE RUN HOURS(unit:h)(ERH)	0	0		Select Di	agnostics		
Freeze Frame Data	63769:REQUEST ENGINE SPEED(RES)	1500	1500	150	AnySetti	ng		
Diagnostic Tests	63774:REQUEST ENGINE SPEED(FINAL)(ERSF)	1500	1500	150				
Bildginostio resto	63770:ENGINE SPEED(ES)	0	0		Trigger S	etting	11	
Data Logging	63766:ENGINE LOAD RATE(Gross)(ELRG)	0	0		Trigger	ON Data	ES	
Data Monitor	63784:ACTUAL EGR VALVE CONTROL VALUE(AEVCV)	0	0		Level	100 Туре	T	
Recorded Data	64368:Total injection quantity(QFIN)	0.0	0.0	0.	Dre-trinn	er 150 Stran	a	30000
	110:ENGINE COOLANT TEMPERATURE(ECT)	30	30	3	Logging status			
Trend Graph	1136:ECU TEMPERATURE(EET)	29.00	29.00	29.0	Charles -	Data logging	display onl	y. Not
Historical Data	158:BATTERY VOLTAGE(BV)	11.85	11.85	11.8	Status	trigger)	atting for a	
Lifetime Data	63780:Engine Start State Status(ESSS)	0	0		Counter	ungger/		0
Enotano Butu	63559:DROOP MODE SW(DMS)	OFF	OFF	OF	Mon Sta	10/26 19:35	56	
Map Table	63561:RMAX SELECT SW1(RSS1)	OFF	OFF	OF	Run	00:00:05 000)	
Log Data	63554:EMERGENCY STOP SW(EMSS)	OFF	OFF	OF	Rest	08-20-00.000	, ,	
ECU Structures	· · · · · · · · · · · · · · · · · · ·	077	~~~	-5	Sample F	Rate setting		
200 outotareo					lease and a			
System Settings	Comment							

SMARTASSIST-Direct							
File(F) View(V) Operation	(O) Tool(T) Help(H)						
RG∰▶≡RKKI							
🔊 🔝 Diagnostics 🗃 🔹	ON LINE Active Code						
MenuToolBar	8 ×						
FCU Information	Data Logging - Data Monitor						Finish
Diagnactic Codec	Description	Value	Max	Min]	Manual Trigger	
Diagnostic Codes	2483:ENGINE RUN HOURS(unit:h)(ERH)	0	0	c	Select Di	agnostics	
Freeze Frame Data	63769:REQUEST ENGINE SPEED(RES)	1500	1500	1500	AnySettin	na	
Diagnostic Tests	63774:REQUEST ENGINE SPEED(FINAL)(ERSF)	1500	1500	1500			
Data Logging	63770:ENGINE SPEED(ES)	0	0	C .	Trigger S	etting	
Data Logging	63766:ENGINE LOAD RATE(Gross)(ELRG)	0	0	C	Trigger	ON Data ES	
Data Monitor	63784:ACTUAL EGR VALVE CONTROL VALUE(AEVCV)	0	0	C	Level	100 Type 🗗	
Recorded Data	64368:Total injection quantity(QFIN)	0.0	0.0	0.0	Pre-trigg	er 150 Strage	30000
Trend Graph	110:ENGINE COOLANT TEMPERATURE(ECT)	30	30	30	Logging s	status	
nenu Graph	1136:ECU TEMPERATURE(EET)	29.00	29.00	29.00	Status	Finished	
Historical Data	158:BATTERY VOLTAGE(BV)	11.85	11.90	11.85	Counter		103
Lifetime Data	63780:Engine Start State Status(ESSS)	0	0	C	Mon Star	10/26 19:35:56	
Man Table	63559:DROOP MODE SW(DMS)	OFF	OFF	OFF	Run	00:01:49.000	
map rable	63561:RMAX SELECT SW1(RSS1)	OFF	OFF	OFF	rxuii	00.01.49.000	
Log Data	63554:EMERGENCY STOP SW(EMSS)	OFF	OFF	OFF	Rest	08:18:17.000	
ECU Structures	63563:RMAX SELECT SW2(RSS2)	OFF	OFF	OFF	Sample R	Rate setting	
System Cottings	63566:ENGINE SPEED SELECT 1(ESS1)	OFF	OFF	OFF	Mode F	Polling	
System Settings	63569:ENGINE SPEED SELECT 2(ESS2)	OFF	OFF	OFF	Interval		1[sec
	63572:REVERSE DROOP MODE SW(RDMS)	OFF	OFF	OFF	Harrison and		10.0
	R2575-ENGINE ODEED OF EOT DEDMICTION/ECOD	OFF	OFF	OFF			

* If the memory is full, the data saving ends automatically.

6.6.3 Switching Screens

You can select Data Display and Graph Display during data monitoring and data saving

News ECU Information	lata Logging - Trend	Graph				
News ECU Information		Contraction of the second s				
ECU Information						Select Graph
	1111					AnySetting
Diagnostic Codes						Graph Cursor Information
Freeze Frame Data						Position
Diagnostic Tests						Time 00:00:00.000
Data Logging						X1 ree Units milli second
Data Monitor	2-2-2-2-					Graph Top
Recorded Data	0000					-
Trend Graph	0.00.000	0:10.000	0:20.000	0:30.000	0:40.000	
Historical Data						
ECU Structures	1111					Graph Bottom
System Settings						
	7.7.7.1					
	8-020-0					
	0:00.000	0:10.000	0:20.000	0:30.000	0:40.000	
	-					Change Disp Data
le le	teduce "1				Expand	Measuala
C	lomment					

6.6.4 Continued Data Saving

If you switch to a different screen during data saving, the process stops temporarily.

But when returning to the Data Logging screen, the save process resumes automatically.

News ECU Information Diagnostic Codes Freeze Frame Data	Data Logging - Trend	Graph				Select Graph AnySetting Graph Cursor Informatic Position
Diagnostic Tests Data Logging						X Time Units mill secon
Data Monitor	You can o	change to	a different	screen dui	ring data s	saving.
Recorded Data	0.00.000	0:10.000	0:20:000	0:30.000	0:40.000	
Historical Data						
ECU Structures	1					Graph Bottom
System Settings						
	3-1-1-1					
	0:00.000	0:10.000	0:20.000	0:30.000	0:40.000	01
	Reduce *1				Expand	MeasData
	the strategy in the					

6.6.5 Monitor Data Confirmation

The monitor results are saved primarily on the PC, and all data values can be confirmed. This submenu is not available during receiving of data. If stopped without the trigger applied, no data has been memorized, thus the Item display is not available.

Operation Tool Bar

- 1 🔁 : Print the screen. (Refer to [6.2.2])
- 2 🔚 : Save a screenshot in BMP format. (Refer to [6.2.3])
- 3 📄 : Save the complete historical data in CSV format. (Refer to [6.2.4])
- Image: Save the measured data. Save the data of the active control after measurement. For the display of the saved data, refer to [7. Error Diagnostic Data Save and Display Functions].
- 5 🖾 : Open the subwindow, and set the display Items and the order of the received data. For details, refer to [Data Select Window].

Main Box

6	lo. : Display the time line number of the data.
7 T	ime : Display the time axis data. Also, the maximum and minimum values are displayed at the bot-
	tom of the list.
8 Iten	Box : The first letter of the selected data name is displayed. (Contents, such as the name and unit,
	can be confirmed on the ECU Structures screen.) Right-click the Item box to switch the display

format from binary to decimal to hexadecimal.

6.6.6 Trend Graph

Displays the currently received data or saved data in a graph. Select related Items for and display them together in a graph. Digital data can be displayed as 1/0 by changing the display mode. The data-receiving graph is automatically shown as additional plot display.

Additional Information Box

- Graph display Item selection: Package data sets with the most appropriate settings sorted per event The data Item names set for graph display and the cursor position where the graph is clicked are displayed. Graph 1 shows top cursor values, graph 2 shows bottom cursor values.
- **Position** : Display data number for the cursor position.
- **3 Time** : Display time passed for the cursor position.
- **I Time Units** : Display the time unit.
- **5** Display Item and data: Display the Item name and data; The Item color corresponds to the graph line color.

Operation Tool Bar

- 6 🔚 : Print the screen. (Refer to [6.2.2])
- Image: Save a screenshot in BMP format. (Refer to [6.2.3])
- Image: The receiving of data starts. (Data that has not been saved according to [6.4.1 Recoded Data] is overwritten and lost.)
- Save the measured data. Save the data of the active control after measurement. For the display of the saved data, refer to [7. Error Diagnostic Data Save and Display Functions].
- 10 🔛 : Do the settings for the display Item and the scaling of the top graph.
- 🔟 🔜 : Do the settings for the display Item and the scaling of the bottom graph.
- Main Box

Graph 1 and graph 2 are displayed. For details regarding operation of the graph, refer to [7.1 Error Diagnostic Data Save and Display Functions].

Comment Box

2 Comment: The full name of the displayed data is displayed.



Figure 6-23 Trend Graph Screen

6.6.7 Package Data Set

It is difficult to determine without experience from the multiple data sets which Item is active when monitored (data setting/option setting) or displayed as a graph. SMARTASSIST-Direct offers package data sets that allow you to set in advance the most appropriate Item for each incident.



■Package Data Set Selection

The Item is set from the selected analysis selection content.



The trend graph display selection is also set to the content set before the event by the package data.

<pre> sMARTASSIST-Direct File(E) View(⊻) Operation(○ </pre>) Tool(<u>T</u>) Help(<u>H</u>)			1000	-		
🔊 🔝 Diagnostics 🗇 🔹 📼	TRAINING Active Code						
MenuToolBar #×	Data Logging - Trend Graph						
ECU Information						RefData Rea	ad
Diagnostic Codes	5000.01100.0100.0100.01					Select Graph	
Freeze Frame Data	3750.0- 75.0- 75.0- 75.0-					HelmECU Default HelmECU Default	
Diagnostic Tests	2500.0 50.0 50.0 50.0					AnySetting	
Data Logging	1250 0 25 0 25 0 25 0					Time 00:00:00.00	00
Data Monitor						X Time Units milli second	
Recorded Data	0:00.000	0:00.300	0:00.600	0:00.900	0:01.200	Graph Top	59.3
Trend Graph						TTHLR	59.3
Historical Data						TTRLR	25.6
ECII Structures						ES	0
Eustern Cettings	0-					Graph Bottom	
System Settings	0-						
	0-						
				Value Malle Value			
	0:00.000 0:00	0.300 0):00.600	0:00.900	0:01.200		

Setting User for Package Data Sets

Package data can be created for each user.

(The user can be set at the time when data logging is executed as the data setting saving function.)

1 It is set arbitrarily with the Data Set button.



2 To check whether the setting is valid, conduct the measurement once under the usual conditions.

SMARTASS2ST-Direct								
File(E) View(V) Operation(Q) Tool(I) Help(H)							
石橋市・国家院院舗	Ri Ri							
n n Diagnostics 🖪 🛊 👘	TRAINING Active Code							
MenuToolBar	e ×							
News	Engine	- Data Logo	ging - Da	ata Mor	nitor		Data logging displa	ay only. Not recording(Waiting for a trigg
ECU Information	D	escription	Value	Max	Min	Unit	Notes	Manual Trigger
Discoutie Codes	63770:ENGINE SF	PEED(ES)	2027	2096	0	r/min	Parameter	Please push a [Manual Trigger] in
Diagnostic Codes	63491:INTAKE AIR	HEATER RELAY1(IAHR1)	OFF	OFF	OFF		Discrete Output	order to save.
Freeze Frame Data		1 m	-	_	-			Select Diagnostics

- ① Click the Start button.
- ② Use the manual or automatic trigger and do a measurement.
- ③ When necessary, press the Stop button to end the measurement.

3 After the measurement, arbitrarily set the graph settings.

SMARTASEEST-Doved							State B and a
File(E) View(V) Operation(Q) Tool(]) Help(H)						
	k						
TRAINI	G Active Code						
MenuToolBar #×							
News	a Logging - Trend	d Graph					
ECU Information						Select Graph	
Discussion Conference	1111					AnySetting	
Diagnostic Codes						Graph Cursor In	nformation
Freeze Frame Data						Position	0
Diagnostic Tests						Time O	0:00:00:000
Data Logging						Grach Ten	illi secono
Data Monitor						Graph Top	
Recorded Data							
Trend Graph	1+ 7+ 5+ t+						
Historical Data							
ECU Structures	0:00.000	0:10,000	0:20.000	0:30.000	0:40.000	Graph Bottom	
System Settings						_	

Note For package data sets created by the user, the graph can only be set to one kind.

4 Click Editing button, arbitrarily set the graph settings, and click the SET button.



Point Click File Save to separately save only the graph settings. (This will not save the settings for the package data set.) This is useful when saving multiple graph settings for the data set of one set.

For details, refer to [7.1 Error Diagnostic Data Save and Display Functions].

5 Click the "Meas data save" button that is activated on the data monitor screen and trend graph screen. (You may use either of the screens.)

Diagnostics	E H TRAINING BOINE CODE								
nuToolBar 🔹	۲ <u>ــــــــــــــــــــــــــــــــــــ</u>								
News	Engine		• D	ata Lo	gging	- Data Monitor			Finished(Not record
ECU Information	Description	Value	Max	Min	Unit	Notes	ECU	.U	
Diagnostic Codes	63770:ENGINE SPEED(ES)	0	0	0	r/min	Parameter	Engine		
agnostic codes	63491:INTAKE AIR HEATER RELAY1(IAHR1)	OFF	OFF	OFF		Discrete Output	Engine		
Diagnostic Tests									
Diagnostic Tests									
Diagnostic Tests									
TASSIST-Direct F) View(V) Operation	tion(Q) Tool(T) Help(H)	_				_		_	0
TASSIST-Ovect F) View(V) Operation Diagnostics							-		0
Crassist-oved F) View(V) Operation Diagnostics							-		0
Diagnostic Tests	tion(Q) Tool(T) Help(H) K TRAINING Active Code X Data Logging - Trend Graph								
Diagnostic Tests	tion(Q) Tool(I) Help(H) K ■ TRAINING Active Code × Data Logging - Trend Graph								RefData Read

6 The confirmation screen for the user setting file creation is displayed. Click Yes



7 Enter the desired name for the setting file and click the <u>Set</u> button.

I Name Set[Trai	ning]		×
Name			Input
Click→	Set	Cancel	

8 The end display is shown. Click OK

II SMA	RTASSIST-Direct	×
0	You have now created a user configuration file.	
		Click

9 Then, the confirmation screen for saving the measurement data is displayed. If you wish to save only the settings, click **No**.



Note For details on how to save the measured data, refer to [7. Error Diagnostic Data Save and Display Functions].

■Package Data Set with User Settings Selection

Select the saved package data in the following manner.

1 Click "User Saved" in the Analysis Selection window.



2 Refer to its name and select the settings file for the package data set, and click the **Select** button.

Ĩ	20151026	
lick→	Select	Cancel

3 The data will be set according to the user settings.



■Package Data Set Editing

Edit the package data set in the following manner.

• Package Data Set in Advance within SMARTASSIST-Direct.

Cannot be edited (overwritten)

After selecting the package data and changing the data Item/graph display settings, create a new user setting to save the changes.

SMA	RTASSIST-Direct		-
1	Do you want t	o overwrite the us	er settings?
		Ye	s No

Package Data Set with User Settings

Overwrite Saving

Can be edited (overwritten).

After selecting the package data and changing the data Item/graph display settings, press the "Meas Data Save" button to overwrite and a confirmation screen is displayed.

Click Yes .

SMA	IRTASSIST-Direct
0	Do you want to create a new user configuration?
	Click - Yes No

Save as New File

If you want to save the changed content separately, click "No" on the confirmation screen when asked to overwrite.



6.6.8 Reference material: Data logging (Engine/2G Eco TNV series)

■Data Set

		Data set button
SMARTASSIST-Direct		
$File(\underline{F})$ $View(\underline{V})$ C	Opera	ation(O) Iool(I) Help(H)
_		
	tems f	or data logging
Data Select[Training]	/	
	*	
Description	CID	Description CID Acronym
ENGINE RUN HOURS(unit:h)	2483	
REQUEST ENGINE SPEED	63769	
REQUEST ENGINE SPEED(FINAL)	63774	
ENGINE SPEED	63770	
ENGINE LOAD RATE(Gross)	63766	
ACTUAL EGR VALVE CONTROL VALUE	63784	
REQUEST RACK POSITION	63744	
ACTUAL RACK POSITION	63745	
RACK CURRENT VALUE	63776	
ENGINE COOLANT TEMPERATURE	110	
ECU TEMPERATURE	1136	
BATTERY VOLTAGE	158	
Engine Start State Status	63780	
DROOP MODE SW	63559	
RMAX SELECT SW1	63561	
EMERGENCY STOP SW	63554	
RMAX SELECT SW2	63563	
ENGINE SPEED SELECT 1	63566	
ENGINE SPEED SELECT 2	63569	
REVERSE DROOP MODE SW	63572	
ENGINE SPEED SELECT PERMISSION	63575	
IGNITION SW1	63552	
ENGINE STARTER	63556	
Engine Start State Status	63780	
ECU MAIN RELAY	63488	
INTAKE AIR HEATER RELAY1	63491	V A
PRE-HEATER Lamp	63494	
- · · · · · · · · · · · · · · · · · · ·		Default Set Cancel

* Item that are not displayed on this list can be set in the Data Logging Options (see below).



Description	CID		Description	n CID	Acronym		
ENGINE RUN HOURS(unit:h)	2483						
REQUEST ENGINE SPEED	63769		4				
REQUEST ENGINE SPEED(FINAL)	63774	14					
ENGINE SPEED	63770						
ENGINE LOAD RATE(Gross)	63766						
ACTUAL EGR VALVE CONTROL VALUE	63784						
REQUEST RACK POSITION	63744						
ACTUAL RACK POSITION	63745						
RACK CURRENT VALUE	63776						
ENGINE COOLANT TEMPERATURE	110						
ECU TEMPERATURE	1136	1					
BATTERY VOLTAGE	158						
Engine Start State Status	63780						
DROOP MODE SW	63559						
RMAX SELECT SW1	63561						
EMERGENCY STOP SW	63554						
RMAX SELECT SW2	63563						
ENGINE SPEED SELECT 1	63566						
ENGINE SPEED SELECT 2	63569						
REVERSE DROOP MODE SW	63572						
ENGINE SPEED SELECT PERMISSION	63575						
GNITION SW1	63552						
ENGINE STARTER	63556						
Engine Start State Status	63780						
ECU MAIN RELAY	63488						
NTAKE AIR HEATER RELAY1	63491		Y A				
PRE-HEATER Lamp	63494						
- · · · · · · · · · · · · · · · · · · ·					Default	Set	Cance
						1	
	_	_		_		/	_
	al i	Set	40.0	onfir			.

Option Settings	0	ption	Settings
-----------------	---	-------	----------

	Option s	set button	
SMARTASSIST-Dir	ect /		
File(<u>F</u>) View	/(<u>V</u>) Øperati	on(<u>O</u>) Tool	(<u>T</u>) Help(<u>H</u>)
5 e i 🕨			

		Items f	or data log	ging (option item)	1
		/		· · /	
Option Data Set[Transco]	_				0
		/			
GID Kind Select					
Description	CID	Acronym	Description	CID Aeronym	
Accelerator Pedal Position	91	APP	1		
MINIMUM RACK POSITION	63758	RMIN			
MAXIMUM RACK POSITION	63759	RMAX	<u></u>		
IDLE RACK POSITION	63760	RIDLE			
RACK CONTROL STATUS	63765	RCS			
REVERSE DROOP CORRECTION VALUE	63771	RDCV			
DROOP CORRECTION VALUE	63775	DCV			
ENGINE ACCELERATION FLAG	63777	EAF			
ENGINE DECELERATION FLAG	63778	EDF			
Engine Stop Warning Status	63779	ESWS			
REQUEST EGR VALVE CONTROL VALUE	63785	REVCV			
Percent LOAD at current Speed	92	%LOAD			
SENSOR SOURCE VOLTAGE	63617	SSV			
RACK ACTUATOR CURRENT	63618	RAC			
CAMSHAFT ROTATION SPEED	63649	CMRS			
AUXILIARY ROTATION SPEED SENSOR	63650	AUXRSS			
GOVERNOR CONTROL P-GAIN	63746	GCPG			
GOVERNOR CONTROL I-GAIN	63747	GCIG			
GOVERNOR CONTROL D-GAIN	63748	GCDG			

Sampling Time Settings

* Normally, a change is not necessary.

Change if necessary.



* The standard is 100 msec.

* On ECU that do not support a change, the other values are grayed-out.

Trigger Setting

* Normally, a change is not necessary.

Change if necessary.

	Trigger Set b	outton		
	/			
SMARTASSIST-Direct				
File(<u>F</u>) View(<u>V</u>)	Operation(O)	Tool(<u>T</u>)	Help(<u>H</u>)	
		×#		
Check			Select th	ne trigger.
Trigger Set[Training]				
Trigger(ON)				
Data Select				
	1	00 10	1	
Level	0			

II Trigger Set[Traini	ng]	
Trigger(ON	1)	
Data Select		-
Level Type	ERH :ENGINE RUN HOURS(unit:h):h RES :REQUEST ENGINE SPEED:r/min ERSF :REQUEST ENGINE SPEED(FINAL):r/min ES :ENGINE SPEED :r/min ELRG :ENGINE LOAD RATE(Gross):% AEVCV:ACTUAL EGR VALVENTROL VALUE: REQRP:REQUEST RACK POSITION:	E

Trigger Set[Training]	
Trigger(ON)	
Data Select ES :ENGINE SPEED	:r/min 👻
	100 10 1
Level 150	
Туре ∕ • ♪ ↓	
elect the trigger value (level).	100 10 1



Description of the Trigger Setting

In trigger mode, the values before the trigger is applied can be saved.

* Normally, a change is not necessary.

Change if necessary.

Trigger Set[Training]	
Trigger(ON)	
Data Select	· · · · · · · · · · · · · · · · · · ·
	100 10 1
Level	Select the number of points saved
	before the trigger actuates.
Туре	• $\mathbf{T} \circ \mathbf{V}$ (default is 50)
	— / 100 10 1
Delay	
	100 10 1
Storage	500 🗸 🔺
	Set Cancel

Example: If the sampling time is 100 msec, 50 x 100 = 5000 msec (5 sec), thus the values are saved from 5 seconds before the trigger is applied.

Trigger Set[Training]	
Trigger(ON)	
Data Select	•
	100 10 1
Level	
Туре	৽৴৽৲
Delay	50 Select the save volume. (default is 30000)
Storage	
	Set Cancel

Example: If the sampling time is 100 msec, 500 x 100 = 50000 msec (50 sec), thus the values are saved from 50 seconds before the trigger is applied.

■Data Monitor Save Function

Monito	r start button						
C SMARTASSEST-CAVE							
File(E) View(V) Ope	ration(Q) Tool(I) Help(H)						
S S Diagnostics							
MenuToolBar **							
News	Engine		• Da	ta Logging - Da	ata Monitor		
ECU Information	Description	Value Max	Min Unit	Notes	ECU	Manual Trigger	
Diagnostic Codes	63784:ACTUAL EGR VALVE CONTROL VALUE(Parameter	Engine	and the second	
Freeze Frame Data	63744:REQUEST RACK POSITION(REQRP)			Parameter	Engine	Select Diagnostics	121
Diagnostic Tests	63776:RACK CURRENT VALUE(RCV)		mA	Parameter	Engine	AnySetting	
Data Locoing	110:ENGINE COOLANT TEMPERATURE(ECT)		degC	A/I	Engine	Trigger Setting	
Data Monitor	158:BATTERY VOLTAGE(BV)		V	Paramatar	Engine	Trigger ON Data	
Recorded Data	63559:DROOP MODE SW(DMS)			Farameter	Engine	50	500
Trend Graph						Dra-bionar Strana	
Historical Data						and the second s	
ECII Structures							
System Settings						Shire	
						Counter	0
						Mon Start	
						Run 00:00:00.000	
						Rest 00:00:50.000	
						Mode Intermittence	
							[00[msec]
						Interval	
File(E) View(⊻) Ope	ration(Q) Tool(王) Help(出)						ai 0 - 8
ති කි Diagnostics 🔮	Active Code						
MenuToolBar #×	Facility Date 1	and an Date	Manilar		te ferenier di	index and that an end of the line of	
News	Engine Data L	ogging - Dati	Monitor	Ua	ta logging di	splay only. Not recording waiting t	or a trigger
ECU Information	Description	Value Max	Min Unit	Notes	ECU	Manual Trigger	
Diagnostic Codes	63744:REQUEST RACK POSITION(REQRP)	703 75	2 0	Parameter	Engine	Please push a (Manual Trigger) in save.	order to
Freeze Frame Data	63745 ACTUAL RACK POSITION(ACTRP)	701 74	3 93	Parameter	Engine	Select Diagnostics	
Diagnostic Tests	63776:RACK CURRENT VALUE(RCV)	2662 325	3 0 mA	Parameter	Engine	AnySetting	
Data Logging	158:BATTERY VOLTAGE(BV)	14	8.40 V		Engine	Trigger Setting	
Data Monitor	63780:Engine Start State Status(ESSS)	0	1 0	Parameter	Engine	Trigger ON Data	
Recorded Data	63559:DROOP MODE SW(DMS)	ON OF	N ON		Engine	Level 0 Type 5	500
Trend Graph						and the second se	
Historical Data						Pre-trigger Strage	
ECU Structures							
System Settings						Logging status	
						Statum Data logging display of recording(Waiting for a	niy. Nat a trigger)
						Counter	0
						Mon Start 10/09 12:59:55	
						Rett 00:00:13.100	
						Sample Rate setting	
						Mode Intermittence	1
							100[msec]

6. Error Diagnostic Function (ECU Access)



SPARIASSEST-DIRECT										C 0 0
ile(E) View(V) Op	eration(Q) Tool(I) Help(H)									
	1. 第 目 23 24									
Diagnostics	5 + - TRAINING Active Code									
lenuToolBar #×										
News	Engine		• (Data L	oggin	g - Data Monito	or.		Logging	to memory
ECU Information	Description	Value	Max	Min	Unit	Notes	ECU	0	Manual Trigger	
	63784:ACTUAL EGR VALVE CONTROL VALUE(0	51	0		Parameter	Engine	Select Di	agnostics	
Diagnostic Codes	63744:REQUEST RACK POSITION(REQRP)	465	752	0		Parameter	Engine	AnySettin	ng	1.5
reeze Frame Data	63745:ACTUAL RACK POSITION(ACTRP)	461	743	93		Parameter	Engine		Santa	
Diagnostic Tests	63776:RACK CURRENT VALUE(RCV)	1887	3253	0	mA	Parameter	Engine	Trigger Se	etting	
Data Looping	110:ENGINE COOLANT TEMPERATURE(ECT)	28	28	20	degC	A/I	Engine	Trigger	ON Data	
0.1.11	158:BATTERY VOLTAGE(BV)	14	14	8.40	۷		Engine	Level	о туре	
Data Monitor	63780:Engine Start State Status(ESSS)	0	1	0		Parameter	Engine	10000000	50	500
Recorded Data	63559:DROOP MODE SW(DMS)	ON	ON	ON	_		Engine	Pre-crigge	er Snøffe	
Trend Graph								Logging s	tatus	
Historical Data								Status	Logging to memory	
ECU Structures								Counter	cogging to memory	85
								Mon Star	10/09 12:59:55	
System Settings								Run	00:02:01.000	
								in the second second		
								Rest	00:00:41.500	
								Sample Rate setting		
								Mode I	ntermittence	
									1	00[msec]
_

									Cł	neck	
SMARTASSIST-Direct											-
ile(E) View(V) Op	eration(Q) Tool(I) Help(H)										-
Diagnostics	5 + - TRAINING Active Code										
enuToolBar #*											
News	Engine		_	- C	ata Lo	ogging - Data I	Monitor			Fir	nishe
ECU Information	Description	Value	Max	Min	Unit	Notes	ECU	1	Manual Tr	gger	
inanostia Codes	63784:ACTUAL EGR VALVE CONTROL VALUE(0	51	0		Parameter	Engine	Select Di	agnostics		
nagnostic Codes	63744:REQUEST RACK POSITION(REQRP)	387	752	0		Parameter	Engine	AnySettin	ng		
eeze Frame Data	63745:ACTUAL RACK POSITION(ACTRP)	392	743	93		Parameter	Engine	-			
Diagnostic Tests	63776:RACK CURRENT VALUE(RCV)	1588	3253	0	mA	Parameter	Engine	Trigger Si	etting		
Data Looging	110:ENGINE COOLANT TEMPERATURE(ECT)	23	25	23	degC	A/I	Engine	Trigger	ON Data		
	158:BATTERY VOLTAGE(BV)	14	14	8.40	۷		Engine	Level	0 Type	3	
Data Monitor	63780:Engine Start State Status(ESSS)	0	1	0		Parameter	Engine		50		500
Recorded Data	63559:DROOP MODE SW(DMS)	ON	ON	ON			Engine	Pre-tripg	er Strape		
Trend Graph											
Historical Data								Logging s	tatus		
ECU Structures								Status	Finished		
System Settings								Counter	and the state of t		127
1.								Mon:Star	10/09 13:08:	04	
								Run	00:00:15.500		
								Rest	00:00:37.300	i.	
								Sample R	late setting		
								Mode I	ntermittence		
										100[m	(sec)
								Interval			
								Concession of the			

Switching Screens

File(F) View(V) Operation	(O) Tool(T) Help(H)						
	8						
Diagnostics 🗇 🔹	ON LINE Active Code						
VenuToolBar	6 ×						
ECU Information	Data Logging - Trend	d Graph					
Diagnostic Codes						RefDa	ita Read
Ereeze Erame Data						Select Graph	
Discussion Traine						AnySetting	•
Diagnostic lests				1000000	1010000	Graph Cursor In	formation
Data Logging	0:00:00	0:00:00	0:00:00	0:00:00	0:00:01	Position	1
Data Monitor	You	can display	numeric data	and a grap	h	Time 00	0:00:00.000
Recorded Data			literation of a second	. and a grap		X Time Units se	cond
Trend Graph	210.0 6325. QUIII	ng data mon	itoring and sa	aving.		Graph Top	
Historical Data	85.0 3112 8 127.5 50	10					
ECI I Structures	22.5-1506.4- 63.8- 25	5.0					
Cool of detdies	-40.0 -100.0 0.0 0	00.07 0.00	-32 0-00-58	0.01.23	0.01.49		
System Settings		0.00		0.01.20	0.01.40		
	Comment						
	ELRG:ENGINE LO AEVCV:ACTUAL E QFIN:Total injectio	AD RATE(Gross) GR VALVE CONTRO n quantity	L VALUE				
	ECT:ENGINE COC						
	ECT:ENGINE COC						

Additional Function (Continued Data Saving)

If you switch to a different screen during data saving, the process stops temporarily.

But when returning to the Data Logging screen, the save process resumes automatically.

File(F) View(V) Operation(D) Tool(T) Help(H)						Contra Contra	×
🔊 🔝 Diagnostics 🗃 👁 📼	ON LINE Active Code							
MenuToolBar #	×							
ECU Information	Data Logging - Trend C	Graph						
Diagnostic Codes						Re	fData Read	
Ereeze Erame Data						Select Graph	l.	
Fleeze Flaine Data						AnySetting		•
Diagnostic Tests	tototo					Graph Curso	r Information	
Data Logging	0:00:00	0:00:00	0:00:00	0:00:00	0:00:01	Position		1
Data Monitor						Time	00:00:00:000	
Recorded Data	You can ch	ange to a dr	fferent scree	n during da	ta saving.	X Time Units	second	
Trend Graph	210.0 6325.5 255.0 100.0					Graph Top		
Historical Data	147.5-4719.1-191.2-75.0 95.0-2112.0-127.5-50.0							
Fill of a	22.5-1506.4-63.8-25.0-	. <u> </u>						_
ECU Structures	-40.0 -100.0 0.0 0.0		0.00.50	0.01.02	0.01.10			_
System Settings	0:00	0:00:32	2 0:00:58	0:01:23	0:01:49			;
	Comment							<i>8</i> ×
		DATE						
	AEVCV:ACTUAL EGE	VALVE CONTROL	ALUE					
	QFIN:Total injection of	uantity						
	ECT:ENGINE COOL	NT TEMPERATURE						
Revelate + 500k Tures (TNN/04	UT TYCRA / CN-00117						6	NUL INTE

ate : 500k Type:4TNV94HT-ZXSRA / SNo:00117

6.7 Historical Data

Display the product's operating data saved to the ECU/controller. There are submenus for the lifetime data, map table, and log data.

Note • The saved content is different for each product.

• The historical data is saved in a precision range that does not affect the control of the product. Thus, use the historical data as a guideline.

6.7.1 Lifetime Data Display

Displays these values: total operating hours, total time and speed etc. during alarms (status when operation is limited due to fault detection), total values and total mean values such as distance.

Operation Tool Bar

- 🚺 进 : Save the ECU's screen display data. (Refer to [7. Error Diagnostic Data Save and Display Functions].)
- 2 🔁 : Print the screen. (Refer to [6.2.2])
- 3 🔚 : Save a screenshot in BMP format. (Refer to [6.2.3])
- 4 💼 : Save the complete historical data in CSV format. (Refer to [6.2.4])
- 5 C : Refresh the current data.

Function Buttons

- 6 _____: Select the ECU/controller that is displayed.
- Clear Trip Time : Delete the data of the selected (checkmark) Item. After pushing the button Selection Item Clear , the password is confirmed.

Note If the clear box does not have a checkbox, the data cannot be deleted.

• Main Box

8	Clear	: Box selected for deletion (click to insert checkmark)

 9	Description	: Save data
9	Description	Save data

- Value : Display total time
- Unit
 : Value unit

 ECU
 : ECU/contr
 - ECU : ECU/controller where data is saved

1	2 345		8	7	,	9		10		11	12
	EINEL MINUTASSOT ON	ration(O)	Tool(T) Help	(h)	/			/		/	
	#BBBCBB	nation(<u>v</u>)	IOOLEY THEIP	/11/	/			/		/	/
	5 5 Diagnostics		RAINING ACT	we Code	/			/	/	/ /	
	MenuToolBar # ×	_			/		/		/	/	
	News	Historical	Data - Lifetim	e Data	/		/			/	
	ECU Information	Clear Se	elect Item								
	Diagnostic Codes	Clear		De	scription		Value	I	Unit	CID	
	Diagnostic Codes		Total ECU F	Run Time				1433.60	h	1033	
	Freeze Frame Data		TOTAL ENG	INE HOURS				1300.00	h	247	
7	Diagnostic Tests		ENGINE W	ARNING TOTAL	RUN HOURS			8.00	h	63920	
/	Data Logging		ENGINE W	ARNING TRIP H	IN HOURS			340	n	63921	
	Historical Data	-	ENGINE RU	IN TIMES				540		03920	St.
	Lifetime Data										
	Man Table										
	map rable										
	Log Data										
	ECU Structures										
	System Settings										
	4 [Service Stars	nersonasinaas	21/2							
	Baudrate : 500k Type:	4TNV98-Z	XXX / SNo:54	321							ONLINE

Figure 6-24 Total Time Display Screen

6.7.2 Map Table

Visualizes the operation status and displays a map table of the frequency information saved in the ECU/controller. The integrated data cannot be deleted. (E.g. the engine load pattern)

Operation Tool Bar

- 🚺 鼲 : Save the ECU's screen display data. (Refer to [7. Error Diagnostic Data Save and Display Functions].)
- 2 🔁 : Print the screen. (Refer to [6.2.2])
- 3 🔚 : Save a screenshot in BMP format. (Refer to [6.2.3])
- 4 📷 : Save the complete historical data in CSV format. (Refer to [6.2.4])
- **5 C** : Refresh the current data.
- Image: Open the adjustment subwindow; full scale of all axes is adjustable in 3 steps (25%, 50%, 100%).

Function Buttons

7	: Select the displayed ECU/controller.
8	: Select the data that is displayed.

Main Box

9	Value] : Total operating hours under all loads and speeds
10	Total]: Total operating hours for all lines (rows)
11	(%)] : Ratio for total operating hours for all lines (rows)
12	Bar Graph]: Bar graph for all axes full scale



Figure 6-25 Map Table Screen

Scale Change

Click 5 to open the below screen.





Figure 6-26 50% Example Display Screen



Figure 6-27 100% Example Display Screen

6.7.3 Log Data

The log data is displayed in two formats of save data.

- Total operating hours when the specified incident occurred
- Number of times and average value that the specified incident occurred during a certain range of operating hours

Operation Tool Bar

- 🚺 🔠 : Save the ECU's screen display data. (Refer to [7. Error Diagnostic Data Save and Display Functions].)
- 2 🔁 : Print the screen. (Refer to [6.2.2])
- 3 🔚 : Save a screenshot in BMP format. (Refer to [6.2.3])
- Image: Save the complete historical data in CSV format. (Refer to [6.2.4])
- 5 C : Refresh the current data.

Main Box

No. : Display the number of the data.

Factor (B) : Display the factor of the specified Item separated in bits. (By right-clicking, the data can be changed to "binary number", "decimal number" and "hexadecimal number".)

B Initiation Time (Hr) : Display the operating hours at the time of the incident



Figure 6-28 Log Data Screen

• Event Select

10 : Select the data saved to the ECU/controller selected at 9. If no data has been saved, an empty box is displayed.

				10
Contraction from the				
File(F) View(V) Operation	(O) Tool(T) Help(H	n		Lear 1597
		*		
N S Diagnostics	TRAINING ANT	Pode		
AnnuToolBas	Troutine Plant			
Histo	rical Data - Loo Data			\backslash
News	e Stop Warning Stat	tus Logging		\backslash
ECU Information				Firmet Calcut
Diagnostic Codes	No.	Factor(B)	Initiation Time(Hr)	Event Select
	1	000000000000000000000000000000000000000	35.00	Engine Stop Warning Status Logging
reeze Frame Data	2	000000000000000000000000000000000000000	25.00	Starter Restraint Status Logging
Diagnostic Tests	4	00000000000000000	20.00	
Data Logging	5	000000000000000000000000000000000000000	15.00	
Historical Data	6	0000000000010000	10.00	
	7	000000000000000000000000000000000000000	5.00	
Lifetime Data				
Map Table				
Log Data				
ECU Structures				
Loo onociones				
System Settings				

Example for binary display

No. /	Factor(B)	Initiation Time(Hr)
1	0100100000000000	0.00
2	0100100000000000	0.00

Example for decimal display

No. /	Factor(D)	Initiation Time(Hr)
1	18432	0.00
2	18432	0.00

Example for hexadecimal display

No. /	Factor(H)	Initiation Time(Hr)
1	4800	0.00
2	4800	0.00

• Example incident data for TNV series engine

(Engine)

(Engine)

Starter Restraint Status Logging : Click to display in the main box a recording of the incident cause that occurred when the engine stopped.

Engine Stop Warning Status Logging : Click to display in the main box a recording of the incident cause that occurred when the starter restraint actuated.

6.8 ECU Structures

This function displays the ID information of the product's electronic control system/ECU/controller and the distribution of the ECU input/output channel.

6.8.1 Analog Channels

This screen is mainly used for communication between developers and the development department.

Information such as units, scaling, and channel information of the analog channels is displayed.

Operation Tool Bar

- 🚺 鼲 : Save the ECU's screen display data. (Refer to [7. Error Diagnostic Data Save and Display Functions].)
- 2 🔁 : Print the screen. (Refer to [6.2.2])
- B I ave a screenshot in BMP format. (Refer to [6.2.3])
- 4 💼 : Save the complete historical data in CSV format. (Refer to [6.2.4])

Function Buttons

: Select the displayed ECU/controller.

Main Box

- **CID** : Used as common ID number for SAE J1939 compliant parameters
- **Description** : Contents of sensors, signals etc.
- Acronym : Abbreviation number (SAE compliant)
- 9 Size : Data Length
- 10 Resolution : Resolution
- 11 Offset : Offset
- 12 Unit : Unit
- 13 Range : Range
- Comment Box

14 Comment: Display information for the selected line (colored in green).

Diagnostics			//		/	/		/
foolBar # ×	ECU Structures - Analog Channels	+				/		
Information	CID Description	Acron	ym Size	Resolution	Offset	Unit	Range	
nostic Codes	63619 RACK POSITION SENSOR	VOLTAGE RPS	V 2	1	0	10	0 to 1023	
	91 Accelerator Pedal Position	APF	1	0.4	0.0	%	0 to 100	
e Frame Data	63618 RACK ACTUATOR CURREN	NT RAC	2	0.05	0.00	A	-1600 to 1612.75	
nostic Tests	1130 ECU TEMPERATURE	EEI	2	0.03125	-2/3.00	degC	-2/3 to 1,/35	
ta Looging	100 BALLERY VOLIAGE	BV	2	0.05	0.00	V.	0 10 3212.75	
	63017 SENSOR SOURCE VOLTA	GE SSN		0.05	0.00	v	0 to 3212.75	
Iorical Data	63744 REQUEST RACK POSITIO	N REQP	(P 2	1	0		0 to 1023	
J Structures	63779 Engine Stop Warning Statu	s ESW	5 2	1	0		0 to 65,535	
og Channels	63786 ENGINE MODE	EM			0	1	0 to 255	
og enames	110 ENGINE COOLANT TEMPE	ERATURE ECT	1		-40	degC	-40 to 210	
tal Channels	63787 Starter Restraint Status	SRS	1	1	0		0 to 255	
D Information	63766 Starter Restraint Factor	SRF	2	1	0		0 to 65,535	
J Data Save tem Settings								

6.8.2 Digital Channels

This screen is mainly used for communication between developers and the development department.

It displays information such as acceptance or rejection of the forced output for output, logic, and channel information of the contact input/output signal.

Operation Tool Bar

- 🚺 进 : Save the ECU's screen display data. (Refer to [7. Error Diagnostic Data Save and Display Functions].)
- 2 🔁 : Print the screen. (Refer to [6.2.2])
- 3 🔚 : Save a screenshot in BMP format. (Refer to [6.2.3])
- 4 💼 : Save the complete historical data in CSV format. (Refer to [6.2.4])
- 5 C : Refresh the current data.

Function Buttons

6 Select the displayed ECU/controller.

Main Box

8

14

- I/O : Input/output division
 - CID : ID numbers for SAE J1939 compliant parameters
- **Description** : Contents of sensors, signals etc.
- 10 Acronym : Abbreviation number (SAE compliant)
- Byte : Byte position of data
- Bit : Bit position of data
- B Logic : Logic reversal
 - Mask : Authorization mask for active control (0 means no change possible)

Comment Box

15 Comment: Display information for the selected line (colored in green).

1234		7	8	9		10	j 11	12	13	14
RT SSIST-DUNE		/	/			/	/	/	/	
E) View(V) Oper	ation(Q) To	ol(I) Help(H)	/	/	/	/			/,	/
	/			/	/	/	/	/	/	
Diannostins		INING ANTING	Code	/	/	/	/	/	/	
- 10				/	/	/	_/	_/	/	
utoolbar **	CII denut	Distal Ch	annala	/	/	/	/	/	/	
News	ECO BITUCIO	ires - Digital Cit	anneis	- · ·				*	*	
U Information	IN/OUT	CID		Description	Acronym	Byte	Bit	Logic	Mask	
	1.	63559 DRC	DOP MODE	SW	DMS	0	0	0	-	
gnostic Codes	1	63561 RM/	X SELECT	SW1	RSS1	0	1	0		
ze Frame Data	1	63554 EME	ERGENCY S	TOP SW	EMSS	0	2	0		
anostic Tests	1	63563 RM/	X SELECT	SW2	RSS2	0	3	0		
	1	63566 ENG	SINE SPEED	SELECT 1	ESS1	0	4	0		
ata Logging	1	63569 ENG	SINE SPEED	SELECT 2	ESS2	0	5	0		
storical Data	1	63572 REV	ERSE DRO	OP MODE SW	RDMS	0	6	0		
11 Structures	1	63575 ENG	SINE SPEED	SELECT PERMISSION	ESSP	0	7	0		
o onuciares	1	63552 IGN	TION SW1		IGNS1	1	0	0		
alog Channels	1	63556 ENG	SINE START	ER	ESS	1	1	0		
ital Channels	1	63780 Eng	ine Start Sta	te Status	ESSS	1	2	0		
In the formation	0	63488 ECL	MAIN REL	AY	MRL	0	0	0	0	
ID information	0	63491 INTA	KE AIR HE	ATER RELAY1	IAHR1	0	1	0	1	
U Data Save	0	63494 PRE	-HEATER L	amp	PHL	0	2	0	1	
stem Settings	0	63495 Eng	ine Warning	Indicator	EWI	0	3	0	1	
	0	63497 ENG	SINE START	ER Interlock RELAY	ESR	0	4	0	1	
	0	63498 ECC	MODE Lar	no	EML	0	5	0	1	
	0	63499 EGP	Step MOT	OR(A)	ESM-A	1	0	0	1	
	0	63500 FGF	STEP MO	(OR(B)	ESM-B	1	1	0		
	ō	63501 EGE	STEP MO	TOR(C)	ESM-C	1	2	0	1	
	- ő	63502 505	OTED MO	TOR(D)	ECHID		3	0		

Figure 6-30 Digital Channels Screen

6.8.3 ECU ID Information

Displays detailed ID information for each ECU/controller. (Related to "Summary Information" of "ECU Information")

Operation Tool Bar

- 1 🗐 : Save the ECU's screen display data. (Refer to [7. Error Diagnostic Data Save and Display Functions].)
- 2 🚠 : Print the screen. (Refer to [6.2.2])
- 3 🔚 : Save a screenshot in BMP format. (Refer to [6.2.3])
- 4 📷 : Save the complete historical data in CSV format. (Refer to [6.2.4])
- 5 C : Refresh the current data.

• Function Buttons

Main Box

7	ECUID	:Management number for the data saved in the ECU
8	CID] : Management number for the data called common ID
9	Description	:Item name that is displayed
10	Value	:Item content
11	Unit] : Unit
12	Notes	Annotation box

and the second se	ation(Q) Too	N(I) Help(H)	/	
BRECER	- (1+0+(-1+7)) - (1+1)	TT	/	
The Diannostics		NING AFTER Code	/	
T ID	in a start		/	
enu looiBar #×	CUStandar	ECUID Information	/	
News	CO Structure	es - ECO ID Reomation		¥ ¥
ECU Information	ECUID	CID Description	Data	Unit Notes
	86	61830 ECU Map Data P/N(OEM)		ECU ID
Diagnostic Codes	88	61832 ECU Software P/N(OEM)	11382200	ECU ID
reeze Frame Data	8A	61834 System Supplier	YANMAR	ECU ID
Diagnostic Tests	8C	61836 ECU S/N	0852754321	ECU ID
	8D	61837 Fuel Injection Pump P/N	729938-51XXX	ECU ID
Data Logging	8E	61838 ECU Map Data P/N	129938-74XXX00	ECU ID
Historical Data	91	61841 ECU Hardware P/N(OEM)	1R1994-00012	ECU ID
ECU Storeburge	92	61842 ECU Type P/N	129938-75XXX	ECU ID
Eco onociones.	93	61843 ECU Hardware P/N	1R1994-00012	ECU ID
Analog Channels	94	61844 ECU Software P/N	1R1994-10021	ECU ID
Digital Channels	96	61846 Qcode		ECU ID
CUID Information	97	61847 Engine Type(Vehicle Manufacture)	4TNV98-ZXXX	ECU ID
CO ID INOTINATION	98	61848 Manufacturing Tester ID		ECU ID
ECU Data Save	99	61849 Flash Programming Date	080614	ECU ID
System Settings	9A	61850 Calibration Equipment S/N(Repair Shop)		ECU ID
	9B	61851 Calibration Date(Repair Shop)	080614	ECU ID
	9D	61853 ECU Installation Date	080614	ECU ID
	9E	61854 Engine Type	4TNV98-ZXXX	ECU ID
	BO	61872 Service Tool Version	01111003	ECU ID
	B1	61873 Fuel Injection Pump S/N	200806148999	ECU ID
		The second se	E 1001	
	B2	61874 Engine S/N	54321	ECU ID
	B2 B3	61874 Engine S/N 61875 FIP & Engine System ID	2GECO_MP_TNV	ECU ID

Figure 6-31 ECU ID Information Screen

6.8.4 ECU Data Save

Saves the previously made settings in CSV format. The settings include correction values, adjustment values, initialization values and ECU ID information that are saved in the ECU.

Note This function is different from 1 Saving the ECU's screen display data.

Operation Tool Bar

- 🚺 🕮 : Save the ECU's screen display data. (Refer to [7. Error Diagnostic Data Save and Display Functions].)
- 2 🚹 : Print the screen. (Refer to [6.2.2])
- 3 🔚 : Save a screenshot in BMP format. (Refer to [6.2.3])
- 4 📷 : Save the complete historical data in CSV format. (Refer to [6.2.4])
- 5 C : Refresh the current data.

Function Buttons

6 _____: Select the displayed ECU/controller.

Main Box

Browse : Calls up a report format that contains the settings which data Items are saved. This function is mainly used by developers. It is not necessary to change it during service work. You can select whether to save "only data" or save "with title".

	A		A	В	C
1	4TNV98-ZNSA	1	Engine T	ype(Vehicle Manufacture)	4TNV98-ZNSA
2	729939-51390	2	Fuel Inje	ction Pump P/N	729939-51390
3	129988-75000	з	ECU Typ	e P/N	129988-75000
4	54686	4	Engine S	/N	54686
5	200709148080	5	Fuel Inje	ction Pump S/N	20070914B080
6	680000065	6	ECU S/N	1	680000065
7	1	7	Pump	PUMP POWER COMPENSATION 1	1
8	2	8		PUMP POWER COMPENSATION 2	2
9	3	9		PUMP POWER COMPENSATION 3	3
10	4	10		PUMP POWER COMPENSATION 4	4

Example "only data"

Example "with title"

- 8 Title : Display the title.
- **9** Sub Title : Display the sub-title.
- **10 Value** : Display the data values.

2 345	3 / 7	8	9	10
File(E) View(V) Ope	eration(Q) Tool(I) Help(H)	/	/	
運動運動の影響		/	/	
Diagnostics	TRAINING Active Code	/	/	
MenuToolBar **	ECU Structures - ECU Data Save			
ECU Information	reportFormat:0110 -		/	
Diagnostic Codes	Output Form	/		
Freeze Frame Data	* Only Data © With Title			
	Tide	SubTitle	Data	1
Diagnostic resis	Engine Type(Vehicle Manufacture)		4TNV98-ZNSA	
Data Logging	Fuel Injection Pump P/N		729939-51390	
Historical Data	ECU Type P/N		129988-75000	
ECII Steveburger	Engine S/N		54686	
EGO Structures	Fuel Injection Pump S/N		20070914B080	
Analog Channels	ECU S/N		0680000065	
Digital Channels	Pump	PUMP POWER COMPENSATION 1	1	
ECILID Information		PUMP POWER COMPENSATION 2	2	
ECO ID Information		PUMP POWER COMPENSATION 3	3	
ECU Data Save		PUMP POWER COMPENSATION 4	4	
the second se				

Figure 6-32 ECU Data Save Screen

6.9 System Settings

This function allows you to change the settings necessary for replacing, repairing and adjusting the ECU/controller, fuel injection pump, fuel injection valve (injector), and all sensors and switches after mounting and installation of the product. It has the submenus "Configuration", "Calibration", "Tuning", and "Initial Settings". You can create a report file after finishing the settings.

Follow the instructions in the technical manuals of the relevant product Important when changing values with any functions within the system settings. If you change settings without due care, the product might stop working or the performance may decrease.

6.9.1 Configuration

You can backup and write the settings and setting values of the product's basic functions.

• Operation Tool Bar

- 🚺 📠 : Save the ECU's screen display data. (Refer to [7. Error Diagnostic Data Save and Display Functions].)
- 2 🚯 : Print the screen. (Refer to [6.2.2])
- I I I Save a screenshot in BMP format. (Refer to [6.2.3])
- 4 📴 : Save the screen data in CSV format. (Refer to [6.2.4])

Function Buttons

5

: Select the displayed ECU/controller.

- **Exchanges** :• This function saves the initial settings saved in the ECU and the correction values (ECU Data Backup (ECU to PC)) and writes these settings and values to the PC.
 - This function writes the correction values of the fuel injection pump to the ECU after it was replaced.

The function by this button is the same as for the ECU Exchange (Execution), part replacement and adjustment, and it is in the location as in YDT, the predecessor to SMARTAS-SIST-Direct.

Refer to the relevant page for instructions.

Main Box

The adjustable Items are listed.

- **Description** : Display the setting Items.
- Value
 Clicking the blue digits of the current setting value opens a window to change the setting value. To make the change, it is necessary to enter the password.

9	Notes	: Reference information for	or the setting e	entry is displayed.
	1234	2	8	9
	File(F) View(V) Operation	on(O) Tool(T) Help(H)	/	
		/	/	
	🔊 🔊 Diagnostics 🗇 🔹	ON LINE Active Code	/	
	MenuToolBar	8×	/	
	ECU Information	System Settings - Configuration		
	Diagnostic Codes	Description	Value	Notes
	Freeze Frame Data	IMMOBILIZER UNIT ID CLEAR	0 0:Clear	
	Discoution Trade	DROOP LIMIT SPEED	1890	
	Diagnostic lests	ISOCHRONOUS LIMIT SPEED	1690	
	Data Logging	DROOP LIMIT SPEED2	1695	
	Historical Data	HOLD SPEED	1800	
	ECII Structures	HOLD SPEED?	1500	
	ECO Structures	SLOW DOWN SPEED	1500	
	System Settings	SLOW DOWN SPEED	85	
	Configuration	SLOW DOWN RATE?	70	
	Calibration	AUTO DECELERATION WAIT TIME	4	
	Turing	DROOP CONTROL SELECT	1 0:ISOCHRO	NOUS, 1:CHANGE POSSIBILITY, 2:DROOP
	luning	ENGINE STOP DELAY TIME	30	
	Initial Settings	Fail-safe Action Delay Time A	30	

Figure 6-33 Configuration Screen

Subwindow



Figure 6-34 Example Change Screen

6.9.2 Calibration This function allows adjusting the standard position for sensors such as the accelerator position sensor. Note When using this function, refer to the service manual and technical information of the relevant product. Operation Tool Bar 🚺 鼲 : Save the ECU's screen display data. (Refer to [7. Error Diagnostic Data Save and Display Functions].) 2 🐴 : Print the screen. (Refer to [6.2.2]) 3 🔚 : Save a screenshot in BMP format. (Refer to [6.2.3]) 4 💼 : Save the screen data in CSV format. (Refer to [6.2.4]) Function Buttons 5 : Select the displayed ECU/controller. • Main Box The adjustable Items are listed. 6 **Description**: Display the correction category. 7

Value : Display the current offset quantity. Clicking opens a window to change the quantity. To apply the change, click "Set".

Notes : Display the relevant comment.

8

1234	6	,	7	8	
SMARTASSIST-Direct		/		/	
File(E) View(V) Ope	ration(Q) Tool(I) Help(H)	/			
			/	/	
Diagnostics	TRAINING Active Code		/		
MenuToolBar # ×		/	/		
News	System Settings / Calibration		+		
ECU Information	Description	Value	Notes		
Diagnostic Codes					
Freeze Frame Data					
Diagnostic Tests					
Data Logging					
Historical Data					
ECU Structures					

Figure 6-35 Calibration Screen

Deta Name MIN	THROTTLE 2		
Current	1.00		
Max	3276.75	5 🔺 🔻	Resolution
Set To	1.00	0.5 🔺 🔻	1
Min	0.00	0.05 🔺 🔻	Min changed value 0.05
		ų	
Note			
	Set	Cano	

Figure 6-36 Example Change Screen

6.9.3 Tuning

You can adjust and set all performance parameters in accordance with industry standards and Yanmar Industrial Standards.

Note When using this function, refer to the service manual and technical information of the relevant product.

• Operation Tool Bar

- 🚺 🗐 : Save the ECU's screen display data. (Refer to [7. Error Diagnostic Data Save and Display Functions])
- 2 🔁 : Print the screen. (Refer to [6.2.2])
- 3 🔚 : Save a screenshot in BMP format. (Refer to [6.2.3])
- 4 📴 : Save the screen data in CSV format. (Refer to [6.2.4])

Function Buttons

- 5 : Select the displayed ECU/controller.
- Main Box

7

- **6 Description** : Display the setting category.
 - Value : Display the current parameter quantity. Clicking opens a window to change the parameters.
- 8 Unit : Display the unit.
- 9 Notes

: Display the relevant comment.

1234	5 6	7 8 9
SMART SSIST Direct		
File(E) View(\underline{V}) Operation(\underline{O})	Tool(I) Help(H)	
🔊 🔊 Diagnostics 🖪 🔹 🗖 TF	RAINING Active Code	
MenuToolBar e>		
News	Engine	- System Settings / Tuning
FCU Information	Description	Value Unit Notes ECU
Diagnostic Codes	Start FUEL INJECTION UP	0 - Parameter Engine
	ACCELERATOR FILTER INCREASE ALPHA	O - Parameter Engine
Freeze Frame Data	ACCELERATOR FILTER INCREASE BETA	0 - Parameter Engine
Diagnostic Tests	ACCELERATOR FILTER DECREASE ALPHA	A 0 - Parameter Engine
Data Logging	ACCELERATOR FILTER DECREASE BETA	0 - Parameter Engine
Historical Data	GOVERNOR GAIN AD JUSTMENT CSD OFF	- 0 - Parameter Engine
	GOVERNOR GAIN ADJUSTMENT CSD ON	0 - Parameter Engine
ECU Structures	LOW PASS FILTER	- Parameter Engine
System Settings		
Configuration		
Calibration		
Tuning	Comment	8
Initial Settings		
Baudrate : 500k Type:4TNV98-Z>	(XX / SNo:54321	ONLINE

Figure 6-37 Tuning Screen

6.9.4 Initial Settings

This function allows to combine all feedback values of the sensor and set the ECU/controller accordingly when replacing or adjusting the ECU/controller or sensors. There are a number of types and subwindows with concrete instructions.

Warning	ullet Initial settings involve many Items that actually operate the product. Only
	personnel who have taken the SMARTASSIST-Direct training may perform
	the test, and must pay due attention to their surroundings.
	If not, the product may move unexpectedly and cause serious accidents.
Important	• In an emergency, turn off the power of the ECU/controller (turn the key switch to "Off") to stop the product.
	 "Maintain the previous status" or "Return to the automatically controlled
	status" are the operations when the initial setting is canceled under the be-
	low conditions. The setting of the operation varies by product.
	 The buttons "Abort, "Stop" or "Cancel" were clicked.
	 The connection harness between the product and the PC is disconnected.
	 The SMARTASSIST-Direct software was exited.
Important	Reset
	ullet Turn off the power of the ECU/controller after the initial settings are com-
	pleted. (Turn the key switch to "Off".)
	Put the product to the initial settings with the SMARTASSIST-Direct, and
	the ECU/controller will change to initial settings mode. If you continue us-

ing the device in this state, the automatic control will become unoperational.

• Operation Tool Bar

1 🔚 : Print the screen. (Refer to [6.2.2])

2 = Save a screenshot in BMP format. (Refer to [6.2.3])

• Function Buttons

3 _____: Select the displayed ECU/controller.

Main Box

Description : Display the setting Items.

Control : Clicking the Execute button opens a window to change the parameters.

- 6 Notes : Annotation box
- **ECU** : Display the ECU.

6. Error Diagnostic Function (ECU Access)



Figure 6-38 Initial Settings Screen

Data Set Subwindow

13

- **Data Name** : Display the name of the selected Items.
- **B** \blacktriangle : Display operation buttons such as Up (\blacktriangle) and Down (\triangledown).
- **9 Operation Message** : Display conditions set before operation.
- **10** Precaution Message : If the operation is dangerous, a precaution reminder is displayed.
- 11 Assistance Message : If the active control is unavailable, a notice is displayed.
- 12 Confirm : This button is green when the operation conditions are met. Click to switch to the next screen.
 - **Cancel** : When aborting the initialization, the sub-window closes.







Sample 1



7. Error Diagnostic Data Save and Display Functions

7.1 Error Diagnostic Data Save and Display Functions



Note It is necessary to import/export the saved data function.

The ECU storage data for error diagnostic screen display and the three types of measurement execution data can be saved.

• Displaying the Error Diagnosis Screen

ECU Maintenance Data

Measurement Execution Data

Active Test Data (Graph)

Hysteresis Data (Graph)

Data Logging

Note For display, only the save data in the product category selected in the start menu can be selected.

Example: Even a user with a license for both AGRICULTURE and CONSTRUCTION cannot display the save data for "CONSTRUCTION" when "AGRICULTURE" is selected in the start menu.

7.2 Saving the ECU Data for Screen Display

1 If the product allows selecting the screen display method of the error diagnosis, the content of the data to be saved is different depending on the selected screen display method.

Data Rate	© 250k 🛛 🐵 500k			
Product Group Selec	TractorEG300/400	•	Func Mode	
Function Select	Engine	•	Save the connected EC	CU's
ECII Search	☉ Ecu Mode 🔹 Fu	inc Mode	screen display data.	
Loo dealch				
Training Start		Cancel		
Training Start		Cancel		
Training Start	○ 250k ⊛ 500k	Cancel		
Training Start Training Start ECU Access[Training] Data Rate Product Group Select	© 250k ⊚ 500k tt TractorEG300/400	Cancel	ECU Mode	
Training Start Training Start ECU Access[Training] Data Rate Product Group Select ECU Application	 250k ● 500k t TractorEG300/400 00:Engine 	Cancel	ECU Mode Save the selected ECU	's

2 Click the "ECU Data Save" button after executing the error diagnosis.





The save confirmation screen is displayed.

Click "Yes" to save the data.



The memo entry screen is displayed.

Enter a memo and click "OK".

Entry possible and double-by	e in single-by yte characters	te s
4		+
4		•

Point Even if you select "Cancel" in the memo screen, the error diagnosis data is saved. You can edit the memo with the saved data function after saving the data.

The communication with the product starts and the data is collected and saved.













7.3 Displaying the Saved ECU Display Data

Select "Diagnostic Data (Display)" of the tab "Data Management".



The ECU Maintenance Data for screen display and the three types of the diagnosis execution result selection screen are displayed.

- Select the data type "ECU Maintenance Data".
- 2 Machine model selected in the main menu at the time of saving
- 3 Model
- 4 Serial No
- 5 Date when data was saved
- 6 Display class ("Func Mode" or "ECU Mode") selected at the time of saving
- ECU name of the original data
- 8 Display selection for the data saved more than 1 month ago
- 9 Memo display box at the time of saving
- 10 Selection button

	Saved Data Selection							0
	Kind ECU Maintena	nce Data -						
	Product Group		Serial No	Date		Туре	ECU Name	
	Tractor			09 October,2015	14:40:59	ECU	Engine	
	Tractor			09 October,2015	14:51:35	ECU	Engine	
	2	3	4	5		6	[7]	
						0		
-	Hide old files (one	month or mo	ore old)					
	->							
					1			
				b Calant Canaal				

Remark

Click **2** - **7** within the red frame and change the sorting order (ascending/descending) of the display.

Select the data you want to display and click the "Select" button.

ind ECU Maintena	nce Data -						
Product Group	Model	Serial No	Date	Time	Туре	ECU Name	
Tractor			09 October,2015	14:40:59	ECU	Engine	
Tractor	[09 October,2015	14:51:35	ECU	Engine	
Hide old files (one	month or mo	ore old)					
Hide old files (one	month or mo	ore old)					
Hide old files (one Entry possible in sir and double-byte cha	month or mongle-byte aracters	ore old)					
Hide old files (one Entry possible in sir and double-byte cha	month or mongle-byte aracters	ore old)					
Hide old files (one Entry possible in sir and double-byte cha	month or mongle-byte aracters	ore old)					

The Diagnostic Data (Display) screen appears.

Open the Item that you want to confirm. The saved information is displayed.



To change the save data that you want to display, click the "ECU Data Load" button. The data selection screen is displayed.



7.4 Saving the Active Control and Hysteresis Measure Execution Data

The "Active Control" function allows to save the measurement data for Items with "Graph" output.

In Diagnostic Data	(Display)		FLINE	lo Codes						
	(Cispid)/ [E		Circle In	0 00003						
enu tooibar 🕷 🗸	Diagnostic T	aete - Activa	Control							
ECU Information	Jugnostic n	cata - rictive	Control						_	
Diagnostic Codes	Manual	Stop buttor	Run buttor	Description	ENG Run	Measured	Desired	Unit	Graph	CID
	0	[STOP]	[RUN]	DIRECT ENGINE RPM CONTROL	req			r/min		6371
Freeze Frame Data	0	[STOP]	[RUN]	DIRECT RACK POSITION CONTROL	not					6371
Diagnostic Tests	0	[STOP]	[RUN]	AUTO HYSTERESIS MEASUREMENT	not					6372
Pulse/Analog etc	0	[STOP]	[RUN]	LOW IDLE RACK POSITION AUTO T	req					6371
	0	[STOP]	[RUN]	HIGH IDLE RACK POSITION AUTO T	req					6371
Digital IN etc	0	[STOP]	[RUN]	DIRECT EGR VALVE CONTROL	not					6372
Digital OUT	0	[STOP]	[RUN]	ENGINE LOAD MONITOR OUTPUT	not			%		6372
Active Control										
ctive Control(Grap										
Hustometic Maasur										
hysteresis measure										
Data Logging										

Click the "Meas Data Save" button on the "Active Control (Graph)" or "Hysteresis Measure" screen after executing the active control.

When the "Graph" is not displayed, you cannot click the button.



The save confirmation screen is displayed.

Click "Yes" to save the data.



The memo entry screen is displayed.

Enter a memo and click "OK".

Entry possible and double-by	in sing te chara	e-byte acters	

Point Even if you select "Cancel" in the memo screen, the measurement data is saved. You can edit the memo with the saved data function after saving the data.

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7.5 Displaying the Saved Active Control and Hysteresis Measurement Execution Data

7.5.1 Displaying the Data

Select "Diagnostic Data (Display)" of the tab "Data Management".



The ECU Maintenance Data for screen display and the three types of the diagnosis execution result selection screen are displayed.

1 Select the data types "Active Test Data" and "Hysteresis Data".

- 2 Machine model selected in the main menu at the time of saving
- 3 Model

4 Serial No

5 Date when data was saved

- 6 Display class ("Func Mode" or "ECU Mode") selected at the time of saving
- ECU name of the original data
- 8 Display selection for the data saved more than 1 month ago
- 9 Memo display box at the time of saving
- 10 Selection button



Point Click 2 - 7 within the red frame and change the sorting order (ascending/descending) of the display. The error Diagnostic Data (Display) screen appears after selecting the data. Open "Active Control (Graph)" and "Hysteresis Measure" of "Diagnostic Tests" and check the content.

	SMARTASSIST-Direct					
	File(E) View(() Tool(T) Help	o(<u>日</u>)			
	🔊 🔊 Diagnos	tic Data(Display	y) 🖪 🔹 🗖 OFF LIN	No Codes		
	MenuToolBar	e ×				
	ECILIpforma	tion			*	
	ECU Informa	tion				
			\setminus			
			V			
MenuToolBar #×	Diagnostic Tests - Hyster	acie Mageura				
MenuToolBar #×	Diagnostic Tests - Hyster	esis Measure				
MenuToolBar # × News ECU Informatio	Diagnostic Tests - Hyster Expand 1200.0	esis Measure				
MenuToolBar * × News ECU Information Diagnostic Code	Diagnostic Tests - Hyster Expand	esis Measure				
MenuToolBar * × News ECU Informatio Diagnostic Code Freeze Frame De	Diagnostic Tests - Hyster Expand	esis Measure				
MenuToolBar *× News ECU Information Diagnostic Code Freeze Frame De Diagnostic Test	Diagnostic Tests - Hyster	esis Measure				
MenuToolBar # × News ECU Informatio Diagnostic Code Freeze Frame Da Diagnostic Test Pulse/Analog et	Diagnostic Tests - Hyster Expand	esis Measure				_
MenuToolBar • × News ECU Informatio Diagnostic Code Freeze Frame De Diagnostic Test Puise/Analog et Digital IN etc	Diagnostic Tests - Hyster Expand 1200.0	esis Measure				
MenuToolBar • × News ECU Informatio Diagnostic Code Freeze Frame Da Diagnostic Test Putse/Analog et Digital IN etc Digital OUT	Diagnostic Tests - Hyster Expand) ^ 1200.0	esis Measure				
MenuToolBar • × News ECU Informatio Diagnostic Code Freeze Frame Da Diagnostic Test Pulse/Analog et Digital IN etc Digital OUT Active Control	Diagnostic Tests - Hyster Expand) ^ 1200.0	esis Measure				
MenuToolBar • × News ECU Informatio Diagnostic Code Freeze Frame De Diagnostic Test Pulse/Analog et Digital IN etc Digital OUT Active Control Active Control	Diagnostic Tests - Hyster Expand 000.0 600.0	esis Measure				
MenuToolBar • × News ECU Informatio Diagnostic Code Freeze Frame De Diagnostic Test Pulse/Anaiog et Digital IN etc Digital IN etc Digital OUT Active Control Active Control Active Control Active Control	Diagnostic Tests - Hyster Expand * 1200.0 000.0 600.0	esis Measure				
MenuToolBar • × News ECU Informatio Diagnostic Code Freeze Frame Da Diagnostic Test Pulse/Analog et Digital IN etc Digital OUT Active Control Active Control Active Control Active Control Active Control Active Sentrol Active Control Active	Diagnostic Tests - Hyster Expand * 1200.0 000.0 600.0	esis Measure				

To change the save data that you want to display, click the "SavedData Read" button. The data selection screen is displayed.



Active Control (Graph)

7.5.2 Reading the Reference Data

If the save data is on your PC, read the "RefData Read" after "Measuring (graph display) " or "SavedData Read" to match the data.



Point • The reference data is displayed in a different line color.

• "RefData Read" can be selected in the tab screen "ECU Access" in the main menu.

7.5.3 Moving the Display Location of the Reference Data

The reference data in the overlap display can be moved horizontally.

Use this to compare characteristic parts of the data.

Remark

In the "Hysteresis Measure", the "Reference Data" can be moved with the "Trend Graph" display.

Active Control (Graph): example of moving the reference data horizontally





Hysteresis Measure: example of moving the reference data horizontally





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7.6 Saving the Data Logging Measurement Data

The data logging function allows to save the measurement data in the "Data Monitor" or "Trend Graph" screen.

1 Click the "Meas Data Save" button.



2 A screen is displayed to confirm that you want to create a user settings file for the measurement data. ^{Note)} Click "No" to only save the measurement data.



- When the package data set is performed on the "Diagnostic Selection Window", this screen is not displayed.
 - For details on creating the user settings file, refer to "User Settings for Package Data".
- **3** The confirmation screen for saving the measurement data is displayed. Click "Yes".



4 The memo entry screen is displayed. Enter a memo and click "OK".

Entry po and doul	ssible ii ble-byte	n single charao	e-byte cters	*

Point Even if you select "Cancel" in the memo screen, the measurement data is saved. You can edit the memo with the saved data function after saving the data.

5 The Save Complete screen is displayed. Click "OK".



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7.7 Displaying the Saved Data Logging Measurement Data

7.7.1 Displaying the Save Data

Select "Diagnostic Data (Display)" of the tab "Data Management".



Click the "Diagnostic Data (Display)" button. The selection screen appears. Select the save data that you want to display.

- **1** Select the "Data Logging" data type.
- 2 Product category selected in the main menu at the time of saving.
- 3 Model
- 4 Serial No
- 5 Date when data was saved
- 6 Not displayed
- ECU name of the original data
- B Display selection for the data saved more than 1 month ago
- Image Memo display box at the time of saving
- 10 Selection button



The error Diagnostic Data (Display) screen appears after selecting the data.

Open the data logging menu and confirm the content.

SMARTASSIST-Direct	
$File(\underline{F})$ $View(\underline{V})$ $Tool(\underline{T})$ $Help(\underline{H})$	
🔊 🔊 Diagnostic Data(Display) 📑 🔹 📼 OFF LINE No Codes	
MenuToolBar s ×	
ECU Information	
Diagnostic Codes	
Freeze Frame Data	
Diagnostic Tests	
Data Logging	
Historical Data	
ECU Structures	
System Settings	

			n 🖻 📾 📾 📾 🕫	
Diagnostics 🗃 🔹 📼	ON LINE Active Code		🖒 🏠 Diagnostics 🗇 🕸 =	ON LINE Active Code
enuToolBar #	×		MenuToolBar	9 ×
ECU Information	Data Logging - Data Monitor		ECU Information	Data Logging - Recorded Data
Diagnostic Codes	Description	Value	Diagnostia Codos	Monitor Start Time 27-10-2015 10:15:0
Diagnostic Codes	2483:ENGINE RUN HOURS(unit:h)(ERH)		Diagnostic Codes	No.[Time]
Freeze Frame Data	63769:REQUEST ENGINE SPEED(RES)	15	Freeze Frame Data	1 [00:00:04.000]
Diagnostic Tests	63774:REQUEST ENGINE SPEED(FINAL)(ERSF)	15	Diagnostic Tests	2 [00:00:05.000]
Data Logging	63770:ENGINE SPEED(ES)		Data Logging	3 [00:00:06.000]
Data Logging	63766:ENGINE LOAD RATE(Gross)(ELRG)		Data Logging	4 [00:00:07.000]
Data Monitor	63784:ACTUAL EGR VALVE CONTROL VALUE(AEVCV)		Data Monitor	5 [00:00:08.000]
Recorded Data	64368:Total injection quantity(QFIN)	C	Recorded Data	6 [00:00:09.000]
Trend Granh	110:ENGINE COOLANT TEMPERATURE(ECT)		Trand Cranh	7 [00:00:10.000]
	1136:ECU TEMPERATURE(EET)	28.	Trend Graph	8 [00:00:11.000]
Historical Data	158:BATTERY VOLTAGE(BV)	11.	Historical Data	9 [00:00:12.000]
ECU Structures	63780:Engine Start State Status(ESSS)		ECU Structures	10 [00:00:13.000]
System Settings	63559 DROOP MODE SW(DMS)	0	System Settings	11 [00:00:14.000]
			System Settings	12 [00:00:15.000]
	Model and serial number of the	selecte	d	13 [00:00:16.000]
	data is displayed on the bottom			14 [00:00:17.000]
				Comment

Data monitor screen

Recoded Data screen
In the saved measurement data, not only the display Items at the time of storing but all logging data is included.

The displayed data can be changed by clicking the "Set" button.

For details on the Data Select screen, refer to [6.6.2 Overview of the Data Sampling Operation].

MART	ASSIST-Great			
de(E) View(V) Operation(Q) Tool(I)	Help(H)		
創出	16 H			
-	Dispensatio Data/Display	OFFIN	IE No Codes	
3 H3	Diagnostic Data(Display)	OFFLIN	NO CODES	
	▼			
Data Se	(ect[Training]			
1.950.00				
No	Description	CID	Description	CID Acronyn
11	ECU TEMPERATURE	1136	ENGINE RUN HOURS(unit:h)	2483 ERH
12	BATTERY VOLTAGE	158	REQUEST ENGINE SPEED	63769 RES
13	Engine Start State Status	63780	REQUEST ENGINE SPEED(FINAL)	63774 ERSF
14	DROOP MODE SW	63559	ENGINE SPEED	63770 ES
15	RMAX SELECT SW1	63561	ENGINE LOAD RATE(Gross)	63766 ELRG
16	EMERGENCY STOP SW	63554	ACTUAL EGR VALVE CONTROL VAI	LUE 63784 AEVCV
17	RMAX SELECT SW2	63563	REQUEST RACK POSITION	63744 REQRP
18	ENGINE SPEED SELECT 1	63566	ACTUAL RACK POSITION	63745 ACTRP
19	ENGINE SPEED SELECT 2	63569	RACK CURRENT VALUE	63776 RCV
20	REVERSE DROOP MODE SW	63572 .	ENGINE COOLANT TEMPERATURE	110 ECT
21	ENGINE SPEED SELECT PERMISSIO	N 63575		
22	IGNITION SW1	63552		
23	ENGINE STARTER	63556		
24	Engine Start State Status	63780		
25	ECU MAIN RELAY	63488		
26	INTAKE AIR HEATER RELAY1	63491		
27	PRE-HEATER Lamp	63494		
28	Engine Warning Indicator	63495		
29	ENGINE STARTER Interlock RELAY	63497		
30	ECO MODE Lamp	63498		
31	EGR Step MOTOR(A)	63499		
32	EGR STEP MOTOR(B)	63500	× .	
33	EGR STEP MOTOR(C)	63501		
			Default	Set Cance

Point Items that are not displayed in the data selection box cannot be saved.

To change the save data that you want to display, click the "SavedData Read" button on the trend graph screen. The data selection screen is displayed.



Trend graph screen

7.7.2 Reading the Reference Data

If the save data is on your PC, read the "Reference Data" after "Measuring (graph display)" or "SavedData Read" to sort the data vertically.

Data Management



Point "RefData Read" can be operated on the "Diagnostic (Execution)" screen in the tab "ECU Access" in the main menu.

Click the "RefData Read" button. The selection screen appears. Select the save data that you want to display.

- **1** Select the "Data Logging" data type.
- 2 Machine model selected in the main menu at the time of saving
- 3 Model
- 4 Serial No
- 5 Date when data was saved
- 6 Not displayed
- ECU name of the original data
- 8 Display selection for the data saved more than 1 month ago
- 9 Memo display box at the time of saving
- 10 Selection button

Product Group	Model	Serial No	Date	Time	Туре
Tractor			09 October,2015	11:17:54	
2	3		4	5	6
× .		m		V	-
Hide old files (one	month or me	ore old)			

Point Click 2 - 7 within the red frame and change the sorting order (ascending/descending) of the display.



The reference data and the "Reference" button appear.

Click the "Reference" button. The "Top Graph" and "Bottom Graph" buttons appear. Select the graph (top or bottom) for the reference.

Display example when "Top Graph" is clicked



Display example when "Bottom Graph" is clicked



7.7.3 Moving the Display Location of the Reference Data

The display location of the graph for the "Reference Data" (bottom graph) can be moved horizontally. Use this to compare characteristic parts of the graph.







To change the data that is displayed in a graph, refer to "[8. Graph Function]".

8. Graph Function

The graph display and basic operation function have the common specification on the screen as shown below.

- "Freeze Frame Data" "Trend Graph"
- "Diagnostic Tests" "Active Control (Graph)" "Hysteresis Measure"
- "Data Logging" "Trend Graph"

8.1 Graph Settings

The graph settings have the following characteristics:

• With the New and buttons on the control tool bar, the two graph screens on the top and the bottom can be set, respectively.



- Four line graphs can be displayed in one graph.
- Analog mode" or "Digital mode" can be selected in the graph display.

Point The separate mode can be set for the top and the bottom screens.



Figure 8-4 Graph display example (top: digital, bottom: analog)

• You cannot display the combination of analog/digital data within the same graph screen.

- The minimum and maximum graph values can be set in the analog mode.
- The content of the graph settings can be saved as the user settings file. The graph settings can be called up for problem analysis.
- Click the "Editing" button to perform the graph settings.

Graph Set[Trainin	g]	
Graph Top	Display Mode ⊚ Analog ☉ Digital (C	Default File Open Editing
No. Data Se	lect 100 10 1	100 10 1
1		
Min		Max
0		
2		
Min		Max 🔺 🔺
0		
3		
Min		Max 🔺 🔺 🔺
0		
4		
Min		Max 🔺 🔺
0		
	File Save	Set Cancel

Figure 8-5 Graph set screen

8.1.1 Analog Mode Basic Operation

The basic operation in the analog mode is as follows:

1 Graph to be set :		"Top" and "Bottom" are displayed.
		In case of the screen with only one graph, the "Top" is displayed.
2 Analog mode selection	:	Click • Analog of the display mode to insert a checkmark.
3 Default	:	All items are automatically set to the default SMARTASSIST-Direct settings.
4 Read file	:	The saved settings are read.
		(Refer to [8.1.3 Saving and Reading the Settings Value] on page 180.)
5 Data selection	:	Select the data that you want to display. Set up to 4 data sets.
6 Minimum value	:	Set the minimum graph value with the lever button and ▲ / ▼ buttons.
7 Maximum value	:	Set the maximum graph value with the lever button and 🔺 / 💌 buttons.
8 File Save	:	Save the entered values to the settings file.
		(Refer to [8.1.3 Saving and Reading the Settings Value] on page 180.)
9 Set	:	Set the entered values and display the graph.

: Set the entered values and display the graph.







8.1.2 Digital mode

Use this mode to display the ON/OFF information of digital IN / OUT and control flag. The available data can be confirmed at the ECU ID ([6.8.2 Digital Channels] on page 144).

Point As the graph is displayed in "0" or "1" in the digital mode, it is not required to set the minimum/maximum values. (Unable to enter.)

1 Digital mode	Click •Digital of the display mode to insert a checkmark.	
2 Data selection	: Select the data that you want to display. Set up to 4 data sets.	
3 Settings confirmation	:Set Click the button to confirm the settings and display the gra	ph

Saving the file and opening operation can be performed in the same procedures as the analog mode. (Refer to [8.1.3 Saving and Reading the Settings Value] on page 180.)

Dis Graph Bottom	play Mo	ode Di	gital (ON/OFF)	Default File	Open	Ec	fi
No. Data Select	1	00	10 1		Select Set	100	0 10	D
Min 0				Max 0				
Q	-	v	Ŧ	- 0		-	v	
2								
Min 0				Max 0				
Q.		v	-	Q			w	
3								
Min 0				Max 0				
9		Ŧ	-	- 0			Ŧ	
4								
Min 0				Max 0				
Q		Ψ	v	0		w	W	Ĭ

Figure 8-7 Digital mode screen

8.1.3 Saving and Reading the Settings Value

The content of the graph settings can be saved and called up later.

Note This function is different from the user settings of [6.6.7 Package Data Set].

Saving the Settings Value

	the graph settings after the error diagnosis, click the 🛛 "Edit.
	to open the save screen.
2 Open the File Save screen	: Click the "File Save " button in the bottom of the graph set subwindow
	dow.
1 Opening the Graph Set screen	\therefore Click the 🔛 or 🌉 button of the operation tool bar to open the subwin-

ing" button on the top right, and then click the "File Save" button.

4 File Save

: Save the file with a name that you can easily remember or search for. You can save the data to any location, but do not change the ".gset" file extension.

Dis	play Mode	Default File O	pen	Edi	ting	
Graph Bottom © A	nalog 🔹 Digital (ON/OF	F) Select Set				
No. Data Select	100 10 1		100	10	1	
1 ESS1 ENGINE SE	PEED SELECT 1				1	
Min 0	Ma	x 1		*	*	
			Ŧ	Ŧ	Ŧ	
2 ESS2 :ENGINE SE	PEED SELECT 2					
Min 0	A A A Ma	x[1	-		*	
			-	Ŧ	¥.	
3 RDMS :REVERSE	DROOP MODE SW					
Min 0	Ma	x 1				
Q			Ŧ	Ŧ	٣	
4 ESSP :ENGINE SPEED SELECT PERMISSION						
Min 0	A A Ma	x 1	-	*		
0		0	Y	*	¥.	



🖉 🖉 🛄 Desktop 🕨 👻	Search Desktop
Organize 👻 New folder	1. 1. 1.
Favorites	
Recent Places YTSK System Folder	
Computer	
▲ ローカルディス・ Network System Folder	
File name:	
Save as type: Graph set File(*.gset)	

■Reading the Settings Value

Opening the Graph Set screen	\therefore Click the 🔛 or 🔜 button of the operation tool bar to open the subwin-
	dow.
2 File Open screen	: After the operation of 1 , click the File Open button in the upper right of the subwindow to open the file open screen.

Point To save the graph settings after the error diagnosis, click the **B** "Editing" button on the top right, and then click the "File Save" button.

4 File Selection

: Select the file name displayed in the subwindow and click the Open button to automatically insert the saved graph setting value.

	Display Mode	Default Fi	le Open Editing			
Graph Bottom	● Analog © Digital ((ON/OFF) Select Set				
No. Data Selec	t 100 10 1		100 10 1			
1 ELRG :ENGIN	E LOAD RATE(Gross	s):%	-			
Min 0		Max 100				
9						
2 AEVCV:ACTUAL EGR VALVE CONTROL VALUE:-						
Min 0		Max 255				
9	· · · · · · · · ·	-	-0			
3 QFIN :Total injection quantity:mm3/stroke						
Min -100.0		Max 6325.5				
9		·	••••			
4 ECT :ENGINE COOLANT TEMPERATURE:degC +						
Min -40		Max 210				
0		-				
	Ella Caua	Cat Canaal				



8. Graph Function



8.2 Graph Control

Minimize the time axis :	Click the Reduce button to minimize the time axis and see the approximate
	tendency of the data transition. The display scale factor is shown in the right
	side of the button. "*1" is the smallest minimize value.
2 Expand the time axis	To look at a part of the graph in detail, click the Expand button to expand.
	The maximum scale factor is 10.
3 Scale factor of the time axis :	It is possible to change the scale factor to 1, 2, 4, 6, 8, and 10.
4 Moving the window :	The display range of the enlarged graph can be moved with the scroll bar.
5 Moving the cursor and:	Click on the graph to move the cursor and the cursor value box is displayed
checking the values	for the data value of that point.
6 Expand/minimize the y-axis :	Drag the comment box to the top to widen it, and expand/minimize the y-axis.
7 Comment	The full name of the data displayed in the graph is displayed.



• Display color of the graph

The background color **1** for each cursor value box is displayed in the common color as the display color of the data value scale and the line color **2** of the line graph.

Dete selection No	Cursor value box	Line graph	Scale of data value
Data selection No.	Background color	Line color	Display color
1	Black	Black	Black
2	Red	Red	Red
3	Blue	Blue	Blue
4	Green	Green	Green



Figure 8-8 Graph Control Screen

9. Manual Link Function

Manual link is the current error screen for the diagnostic (execution) function. By clicking the Defect Display item, this function allows you to link to the data related to maintenance and service.

With this function, service technician can promptly obtain the corresponding data for the defect (failure).



- Yanmar provides the data displayed with manual link function separately from the normal technical and service manuals.
 - The images used in this chapter are all example screens.
 - Depending on the product, the data may not be available.

9.1 Structure of the manual link function



Note The manual link button is only displayed if the manual link data that was from the center by model is the same as the model of the connected product and information relevant to the error signal is included.

<Browser warnings>

9.2 PC functions required for display

The related information data is displayed in the browser, e.g. Internet Explorer (IE).

0.01	0		Colt® M
C: ¥ProgramData¥YSASSDI	IR 9 - C S TROUBLESHOOTING	M ×	0.0
ファイル(F) 編集(E) 表示(V) お気に入	ウ(A) ツール(T) ヘルプ(H)	× Google	• 🦂 検索 • 詳細 ≫ ロクイ
TROUBLESHOOTING MAN	UAL		
Analog Input Related Failures	Analog Input Related Failu	ires	
 Pulse Sensor Related Failures 	1	Error (low voltage)	P1202/4
 Contact Output Related Failures 	Rack position sensor	Error (high voltage)	P1203/3
Contact Input Related Failures		Error (low voltage)	P0122/4
 Actuators etc. 		Error (high voltage)	P0123/3
 E-ECU Internal and 	Accelerator sensor	Intermittent failure	P0124/2
Communication Errors		Error (foot pedal-close position)	P1125/1

Note • The following browsers are supported:

- Internet Explorer 6.0 or higher
- Mozilla Firefox 5.0 or higher
- The displayed (called up) data is an independent, stand-alone HTML document. After display, the functions are not related to the SMARTASSIST-Direct functions.

ファイル(F) 編集(E) 表示(V) お気に入	り(A) ツール(T) ヘルプ(H)	× Google	• 🚰 検索 • 詳細 » ログ
TROUBLESHOOTING MANU	JAL		
 Analog Input Related Failures 	Analog Input Related Failures		
 Pulse Sensor Related Failures 	(Error (low voltage)	P1202/4
 Contact Output Related Failures 	Rack position sensor	Error (high voltage)	P1203/3
Contact Input Related Failures		Error (low voltage)	P0122/4
 Actuators etc. 		Error (high voltage)	P0123/3
E-ECU Internal and Communication Errors	Accelerator sensor	Intermittent failure	P0124/2
		Error (foot pedal-close position)	P1125/1
		Error (foot pedal-open position)	P1126/0
		Error (low voltage)	P0222/4
		Error (high voltage)	P0223/3
	205250000000000000000000000000000000000	Intermittent failure	P0224/2
	Spare accelerator sensor	Error (foot pedal-close position)	P1225/1
		Error (foot pedal-open position)	P1226/0
		Error (pulse communication)	P1227/8
		Error (low voltage)	P2228/4
	Atmospheric pressure sensor	Error (high voltage)	P2229/3
		Internitient failure	F1000

Note Depending on the security settings on your PC, the above message may be displayed. This is not a problem.

9.3 Displaying Manual Link Data

Manual link function operates on the "Diagnostic (Execution)" menu of "ECU Access".



When there is an item for manual link data related to the current error item, the "Display" button is displayed.

MenuToolBar	₽×				
News		All ECU			Diagnostic Codes
ECU Information		Manual	Code	FMI	Description
		Display	00 7F80B	04	EGR valve fault A(Step moter A)
Diagnostic Codes		Display	00 7F80C	04	EGR valve fault A(Step moter B)
Active DTC		Display	00 7F80D	04	EGR valve fault A(Step moter C)
Logged DTC		Display	00 7F80E	04	EGR valve fault A(Step moter D)
	=	Display	00 00276	02	M EUC EEPROM checksum fault
DTC Information List		Display	00 0001D	08	Accelerator 2 sensor fault(Puls c

Items without display data are blank.

MARIASSIST-Direct				
File(F) View(V) Operation(C	D) Tool(T) Help(H)			
# 51 B B B B B				
🖄 🏠 Diagnostics 🖪 🔹 📼	ON LINE Active Co	de		
MenuToolBar #	×			
ECU Information	Diagnostic Codes	- Active DTC		
Summary Information	Manual	Code	FMI	Description
Cummary micrimation		P1402	4	EGR valve fault A(Step moter A)
Diagnostic Codes	•	P1412	4	EGR valve fault A(Step moter B)
Active DTC		P1422	4	EGR valve fault A(Step moter C)
A CONTRACTOR OF A CONTRACTOR O				

Click the "Display" button to display related information. The displayed page may have a further link to other related information.

		- Outge	- Carter - Corto	- 24	
TROUBLESHOOTING MAN	UAL				
Analog Input Related Failures	Analog Input Related Failure	5		^	
Pulse Sensor Related Failures		Error (low voltage)	P1202/4		
Contact Output Related Failures	Rack position sensor	Error (high voltage)	P1203/3		
Contact Input Related Failures	6	Error (low voltage)	P0122/4		
Actuators etc.		Error (high voltage)	P0123/3		
E-ECU Internal and Communication Errors	Accelerator sensor	Intermittent failure	P0124/2		
		Error (foot pedal-close position)	P1125/1		US
		Error (foot pedal-open position)	P1126/0	225/1 : Spare Acceler ×	
		Error (low voltage)	P0222/4	へルプ(H) on the key switch.	× Google • 請檢業 • 詳細 »
		Error (high voltage)	P0223/3	correctly inserted. disconnected or the insulation	of the wiring is not neeled
	Share accelerator sensor	Intermittent failure	P0224/2		of the ming is not peoled.
	spare accelerator sensor	Error (foot pedal-close position)	P1225/1		

Not only buttons but also images and characters displayed in another color have links to other information.



9.4 Notice Screen When Starting the Diagnostic (Execution) Screen

The notice screen about available manual link data on your PC from the ECU data of the connected product is displayed.

Display when there is multiple data

The selection screen for available data is displayed.

Select the data and click "OK". Then, the main screen is displayed.

Manual List	Language
4TNV98	Japanese
Dmy_Eng05	Japanese

Example screen

If manual link data in a language different from your OS is saved on your PC, the following notice screen is displayed. You can select the data in a different language.

- **1** Selection window for different languages
- 2 If used.
- 3 If not used.



Note When the manual display language setting and the OS language are different, the manual display language setting is prioritized.

9.5 Downloading Manual Link Data

You can download manual link data by manual selection from the center.



Note: You can only download manual link data from the available product category.

The selection screen for manual link data is displayed.

Firstly, connect to the center and obtain the download candidate list.

Update	9	2 Case	
Keywo	ord	Find Find result	clear
Find re	esult	2 Case	
All che	eck All	uncheck	
X	No.	Manual Name	Ver
	1	AG Series Combine マニュアル	1
	2	AG Series Combine マネージメント ECU回路図	1

After communicating to the center, the available data list appears.

- (The already downloaded data is not displayed)
 - Number of available downloads
 - Manual name (applicable model name)
 - 3 Data version
 - I Date of data release (correction)
 - 5 "N (New)" or "C (Correction)"
 - 6 Data volume
 - 7 Display language

Keyw	ord		Find	Find res
Find r	esult	24 Case		
All ch	eck All	uncheck		
- X	No.	Manual Name	Ver.	Publ
	1	TNV Tier3 Service Manual	1	4/13/2
Ø	2	4TNV94HT-Z Service Manual	2	9/30/2
Ø	3	Dmy_Eng05 2	2 3	3/22/2
	4	Dmy_Ag06	3	4/21/2
	5	AG6100.6114.7114 Manual Linnk Data	1	3/5/20
	6	AG6100,6114,7114 Manual Linnk Data	1	3/5/20
	7	AG6100,6114,7114 Manual Linnk Data	1	3/5/20
	8	AG6100,6114,7114 Manual Linnk Data	1	3/5/20
	9	AG6100,6114,7114 Manual Linnk Data	1	3/5/20
	10	AG6100,6114,7114 Manual Linnk Data	1	3/5/20
	11	AG6100,6114,7114 Manual Linnk Data	1	3/5/20
	12	AG6100,6114,7114 Manual Linnk Data	1	3/5/20
	13	AG6100,6114,7114 Manual Linnk Data	1	3/5/20
	14	Tier4 Test Manual	1	10/22/
	15	Dmy_AG07	1	12/25/

Note The list is not displayed for models without the issued manual link data.

Select the item you want to download and click the "Download" button. Download begins.

- **1** Tick the checkbox. You can download multiple items at the same time.
- Download Execution button
- 3 Scroll Bar



Point ● It takes time to download multiple items at the same time. Control the scroll bar **B** and check all checkbox.

• All checkboxes are selected when displayed.

9. Manual Link Function

The download condition is displayed. After the download is complete, you are back to the selection screen.



Remark The downloaded data is automatically stored at a specified folder in your PC.

Search refinement is possible for the download data. Select the item you want to download and click the "Down-load" button **1** to start downloading.

1 Download Execution button

2 Number of search results

Clear the search results and display all results.

4 Keyword input field

5 Start Keyword Search button

6 Select all checkboxes for the data that you want to download.

I Clear all ticked checkbox for the data you want to download.

Updat Keyw	te ord	9 Case			F	ind	Find result clea
Find r All ch	esult eck All	→ 9 Case					
1	No.	Manual Name	Ver.	Publish Date	State	Size	Language
	1	AG6100,6114,7114 Manual Linnk Data	1	2014/03/05	N	39 MB	Japanese
	2	AG6100,6114,7114 Manual Linnk Data	1	2014/03/05	N	46 MB	Japanese
	3	AG6100,6114,7114 Manual Linnk Data	1	2014/03/05	N	13 MB	Japanese
	4	AG6100,6114,7114 Manual Linnk Data	1	2014/03/05	N	14 MB	Japanese
	5	AG6100,6114,7114 Manual Linnk Data	1	2014/03/05	N	23 MB	Japanese
	6	AG6100,6114,7114 Manual Linnk Data	1	2014/03/05	N	10 MB	Japanese
	7	AG Series Combine マニュアル	1	2013/12/06	N	2 MB	Japanese
	0	An Costas Combine The State & COLUMPS	*	0010/10/00	M	0.40	1

The keyword search is performed in "Partial match".

lodate Keyword		*NV			Find Find	l result cli	ear
ind r	esult	24 Case					
ll ch	eck /	All uncheck					
	No	. Manual Name	Ver.	Publish Da	te State	Size	
	1	TNV Troubleshooting (Manual Link TK)	1	2/19/2015	N	2 MB	1
	2	TNV Tier3 MANUAL LINK DATA / Chinese	1	1/7/2014	N	2 MB	
	3	TNV Tier4 Troubleshooting Manual (B)	1	3/13/2015	N	1 MB	-
	4	TNV Tier4 Troubleshooting Manual (B)	1	3/13/2015	N	2 MB	1
	5	TNV Tier3 Service Manual (Traning)	1	9/30/2011	N	2 MB	
	6	TNV Tier3 Service Manual (Traning) B50	1	9/30/2011	N	2 MB	

9.6 Language Change Setting of Manual Link Data

Language settings are available for the manual link data. (As of 2012, Japanese and English are available)

Regardless of the OS language setting on your PC, you can change the language of the manual link data.

- When you want to confirm English (correspondence for inquiries, etc.)
- When you want to confirm Japanese

Click "Option" in "Tool" on the main screen for setting method.



P Option	
Unit Setting	
Temperature Celsius(degC)	Fahrenheit(degF)
Pressure 💿 psi	
Failure Display form	
Receive Code Onversion	sion Code
Manual Language	
English	Click
Language Setup	
English •	Set Cancel

Note In the manual link function, the manual display language setting has priority over the OS language on your PC.

9.7 Searching and Displaying Manual Link Data

If necessary, the downloaded manual link data can be displayed from other locations than the Diagnostic Codes screen. It can be used like a normal technical manual.

Main menu: Data Management→Manual Search

Main Screen: View→Manual Find

1 SMARTASSIST-Direct		SMARTASSIS	ST-Direct	
File(F) View(V) Tool(T) Help(H)	File(F)	View(V) Operation(O)	Tool(T) Help(H)
		间日日	News(N)	•
🔝 Main Menu 🗇 🗣 📼		551	ECU Information(])	NG Active C
MenuToolBar & ×		ManuTa	Diagnostic Codes(<u>F</u>)	,
ECU Access	commission that are be performed without the FOU server tech	Menuro	Freeze Frame Data(F	<u>()</u>
Data Management	<pre><operations be="" can="" connected="" ecu="" performed="" that="" the="" without=""></operations></pre>		Diagnostic Tests(D)	•
Diagnostic Data (Display)	The communication connection to the center is included and a necessa		Data Logging(L)	
Product Operation Data	included.		ECU Structures(E)	
(Display)			System Settings(S)	
ECU Soft Download		Fr	Manual Search/M)	Click
Trim Data Download		Dra	agnostic rests	
Manual Search	Click: View troubleshooting Manuals>>		Data Logging	
Saved Data			istoriaal Data	
Exchange Information	Search for troubleshooting manual downloaded to SA-D.			
Database Assess		EC	CU Structures	
Database Access		Sy	stem Settings	
Advanced Settings/Additional Settings				
JOD Assistant]			
	Comment			
AGRICULTURE / Tractor / Expert		Developte	- 500h Tura (Thi) (00 7)	/VV / CNE4004
AGRICOLIGICE / Hactor / Expert		Baudrate	: 500k Type:41NV98-Z)	XX / SN0:54321

Display selection screen of manual link data

- Keyword search character input field (enter either "Representative Model Name" or "Series Name")
- Search Execution button
- 3 Change Sorting "Ascending/Descending"
- 4 Start Sorting button
- 5 Display/selection field of manual link data
- 6 Display button



When the manual link data is displayed from the "Manual Serch" menu, the "Content Page" opens. This "Content Page" has links to each related page within the data.

ファイル(F) 編集(E) 表示(V) お気に入り(A) [※]	X Google	- Mar - 1	#8 » ログイン
NV Tier4 Troubleshooting	Manual (B)			
Sensor related	.Sensor related			
Contact output related	1	Crank signal mathemotion		P0336
related	Grank speed sensor	No cranit signal		P9337
Actuator	1	Can signal malfunction		P0541
ECU related	12000033000	No cam signal		P0542
Contact input related	Carn speed sensor	Angle offset failure	P1341	
Post treatment control		No signal on both crask a	Posse	
Others	1	Accelerator sensor 1 (Eac	10123	
		Accelerator sensor 1 (here	n P0122	
		Accelerator sensor 2 (Eac	1 19223	
		Accelerator sensor 2 (Insu	() P0222	
		Dual accelerator sensor (c	• P1545	
	Accelerator sensor	Dual accelerator sensor (o	P1647	
		Accelerator sensor 3 (Esc	1 190228	
		Accelerator sensor 3 (max	n P9227	
		Accelerator sensor 3 failur	PLOF	
		position) Accelerator sensor 1 failu	ed anne	

9.8 Deleting Manual Link Data

Deletion of the manual link data can be performed from the main menu.



Delete selection screen of manual link data

- 1 Keyword search character input field
- 2 Search Execution button
- 3 Select All button
- 4 Deselect All button
- 5 Display/selection field of manual link data
- 6 Start Deletion button



Remark

Depending on the user's license, the confirmation method of manual link data for reference is different.



Based on the nameplate model information stored in the ECU, confirm the reference data.

10. News Link

10.1 Development Background for the News Link

To develop a news link function for SMARTASSIST-Direct that uses a function that can read the nameplate mode and serial number from the ECU of the connected product, and that reliably delivers on screen quality-related and technical news to on-site personnel.



10.2 News Link

When news relevant to the connected product are available, the News Menu is displayed.

	MenuToolBar # ×				
Relevant →	News	Engine	 ECU Inform 	ation - Summary Information	1
news	ECU Information	System Group	Detail	Value	
	Summany Information	Engine	Туре	4TNV98-ZXXX	1
avallable	Summary miorimation		Rated RPM	2000.0	0
	Diagnostic Codes		SNo	54321	1
	Freeze Frame Data		Manufacturing Test Date	080520	1
	Discretia Testa		Run Hr	1300.0	0
	Diagnostic Tests	Fuel System	Туре	2GECO_MP_TNV	
	Data Logging		Part No.	729938-51XXX	
	SMARTASSIST-Direct File(F) View(V) Operation(O)	Tool(T) Help(H)			
	MenuToolBar # ×				
No relevant →	ECU Information	ECU Information - Sun System Group	mary Information Detail	Value	Unit
news	Commany Michinaton	Engine Type	1	4TNV94HT-ZXSRA	
available	Diagnostic Codes	Rate	ed RPM		2200.00 //min

Remark

Assuming that the user or owner of the product is looking at the screen, it is displayed in a plain way.

When clicking "News" and "News Link", the relevant news list is displayed.

	SMARTASSIST-Direct						
	File(F) View(V) Tool(T) H	lelp(H	1)				
	Diagnostics	- 0	FF LINE Active	Code			
	MenuToolBar	# ×					
	News		News - News VI	ew		_	
Click \rightarrow	News Link		Description	News Name	News No.(YDS)	News No.(YTIS)	News No. ISSUE
enen ,		-1	Display	テストニュースNo.002新規登録		YTIS200001	DEPT200001

All news numbers (YDS, YTIS, department publishing numbers) that are registered at the center (SMART-ASSIST-Core) are displayed.



News numbers are displayed so that you can research them later with other systems in case that you cannot see the news details data.

When more than one relevant news item is found, it is displayed like this.

MenuToolBar	e ×					
News	Ĺ	All ECU		News - News	View	
News Link		script	News Name	News No.(YDS)	News No.(YTIS)	New
Follistan		Display	テストニュースNo.002新規登録		YTIS200001	DEPT2
ECU Information	E	Display	ニュース9 12/2追加	YDS0900001	YTIS900001	DEPTS
Summary Information		Display	NEWS11	YDS1100001		
Diagnostic Codes						
Freeze Frame Data						

When clicking the "Display" button, a screen to confirm the contents of the news and attached files is displayed.

MenuToolBar	e ×					
News	All	ECU		 News - News 	View	
News Link ECU Information		rip) isplay テン	News Name ストニュースNo.002新規登録	News No.(YDS)	News No.(YTIS) YTIS200001	New: DEPT2
Summary Information	on D	isplay isplay NE	2一人9 12/2追加 EWS11	YDS0900001 YDS1100001	115900001	DEPTS
			$\overline{\mathbf{v}}$			
I New	s Details[Trainin	g]			C III X	
New	s Subject	NEWS	511			
New	/s No	YDS	YDS1100001			
		YTIS				
		ISSUE	[
Con	tent	NEW1 YTIS_I	1 PRODUCT_CATEGOF	RY ERASED	<u></u>	
		4			* *	
Atta	ched File	3.test_ 添付 2	commitmentfile0	003.csv		
		添付_3	3.XmlFile.xml			

Select the attached file and click the "Select" button to open it.



Pill D. n	DI D P + 15 I = That? Microsoft PowerPoint	E CIME2065.JPG - WINDOWS JR IN EL-J-
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C3 ・		
1 🔷 😁 🗐 🚔 🤂 PDF ##Eネット - 🔗		
	PowerPoint	
	2 10-8/01	
4 8 0 107 -	Word	
BDE		(2 · 10 € ■ 5 C ×
		Image
		(e.g. JPEG)



If no details are available for the news, the Details button is not displayed.

SMARTASSIST-Direct	-	And in case of the local division of the loc	and the second second	
File(<u>E</u>) View(<u>V</u>) Tool(<u>T</u>) Help	» <u>(Н</u>)			
🔊 🔊 Diagnostics 🗗 🔹 📼	OFF LINE	Active Code		
MenuToolBar & ×	News - N	ews View		
News	escripti	News Name	News No.(YDS)	News No.(YTIS)
News Link	t	estNewsNo.002NEW		TEST 1

This may be the case in the following two conditions.

- When the news was registered at the center, no details were attached.
 - \rightarrow This is done when the purpose of the news is only to raise attention of the user
- After login, the SMARTASSIST of data updating was canceled.
 - \rightarrow Data is downloaded in the below order, so **2** may not be on the PC.
 - News list
 - 2 Then, the contents of all news and attached files

SMARTASSIST-Direct	t	
Dow	vnloading News Co	ntents
Step	:	15 / 40

When clicking "News Link" while the product is connected, a warning is displayed asking to disconnect the connection. The purpose of this is to exclude the possibility of misuse of the product.

SMAR	RTASSIST-Direct
?	To view the news, you must disconnect communication with the ECU. Disconnect, or displays information about news?
	Click → Yes No

MenuToolBar ð × Historical Data - Lifetime Data Relevant News Save Data Disp Ref Data Disp Ave Disp Maintenance Info E Historical Data news A:GET DATA DISP A: Value available Description Lifetime Data 2016/05/30 14:49:18 DateTime Map Table 4TNV98-ESDB6 VehicleSignatureType Log Data H0824 VahialaldantificationNumber MenuToolBar 8 × No relevant → Engine · Historical Data - Lifetime Data News news Clear Select Item ECU Information available Diagnostic Codes Total ECU Run Time 1433.60 h Freeze Frame Data TOTAL ENGINE HOURS 1300.00 h Diagnostic Tests ENGINE WARNING TOTAL RUN HOURS 8.00 h ENGINE WARNING TRIP RUN HOURS 1.00 h Data Logging 340 ENGINE RUN TIMES . Historical Data Lifetime Data

News function starts not only during error diagnosis, but also when collecting product operation data.

11. Functions Related to the Product Operation Data

About Functions Related to the Product Operation Data

• These are functions to call up, display and save information about the operation status of the machine (i.e. Product Operation Data) stored in each ECU/controller equipped in the product.

Also, it is possible to display the comparison of the past save data for the same product and the save data of the other product.

Understand and use the Product Operation Data for maintenance and usage guidance for the users.



Figure 11-1 Outline of Product Operation Data

• The Product Operation Data is categorized into 3 types of information.

Historical Data - Lifetime Data

Save Data Disp Ref Data Disp Ave Disp Maintenance Info Exc

A:GET DATA DISP	A: Value	A: Unit
DateTime	2015/10/27 13:56:37	Onit
VehicleSignatureType	4TNV94HT-ZXSRA	
VehicleIdentificationNumber	00117	
TotalEngineHour	0.00	h
TotalEngineHours(h)		h
ManufacturingTestDate	110121	
Total ECU Run Time	1.50	h
Total Engine Hours	0.00	h
Engine Trip Run Hours	0.00	h
Engine Warning Total Run Hours	0.00	h

Figure 11-2 Example screen of the lifetime data (integrated data for whole period)

ne Loa	d Patt	ern [h]									•
								Er	ngine S	peed [[rpm]
	0 _	1000 -	1200 -	1500 -	1800 -	2000 -	2300	2500 -	Total	(%)	0 - 50%
0.0-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
20.0-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
40.0-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
50.0-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
60.0-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
70.0-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
80.0-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
90.0-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			20 40
(%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			

Historical Data - Map Table (4TNV94HT-ZXSRA,00117,2015/10/27 13:56:37)

Figure 11-3 Example screen of the distribution diagram data (integrated data for whole period)

No.	Data(B)	Save Time(Hr)
1	010010000000000	0.0

Figure 11-4 Example screen of the log data (integrated data for a given period)



11.1 Acquisition of Product Operation Data (Auto)

1 Select "Diagnostics (Execution)" or "Set Value Copy" of the tab "ECU Access".


2 The connectable ECU is searched and the connection execution screen appears. Click "Start".

ſ	SMARTASSIST-Direct
	Make sure that ECU is connected and power on.
	ОК
	The ECU Access
	Data Rate
	Function Select Engine
	ECU Search © Ecu Mode
Click	Start Cancel

If there are problems including the power is not turned on, the power is unstable, and the communication cable is disconnected, an error appears. Click "Close" to determine the cause of problem.

S Commun	lication Processing Error	
8	[Disposal]:Please check an ECU power supply. Error Code:1001 Communication un-conr (0x00000008)	k a cable and necting. Click

3 The communication with the ECU starts and the acquisition of product operation data starts.



Point The acquisition completion dialog box is not displayed after the automatic acquisition of product operation data. To confirm the completion, select "Product Operation Data (Display)" of the tab "Data Management" in the main menu.

11.2 Acquisition of Product Operation Data (Manual)

1 Select Product Operation Data (Acquisition) of the tab "ECU Access" in the main menu.



2 The display that urges to connect your PC with the ECU (product) and the power supply appears.



After connecting your PC and the check coupler of the product with an interface box and turning ON the power (key switch), click the "OK" button. The communication with the ECU starts.

3 A connectable ECU is searched for and the connection execution screen is displayed. Click "Start".



	P ECU Access Data Rate	© 250k	© 500k
	ECU Applicatio	n 00:Engine	•
Click —	Sta	rt	Cancel

If there are problems such as the power is not turned on, the power is unstable, or the communication cable is disconnected, an error is displayed.

Click "Close" and determine the cause of problem.



4 If there is no connectable ECU in the preset Data Rate, the Data Rate change screen is displayed. Change the speed and click the "ECU Search" button.

[1 ECU Access		1
	Data Rate 💿 250k	● 500k	Change
Click —	ECU Application 00:Engine	•	
	Start	Cancel	

- **Remark** Right after turning on the power of the product (with the key switch), ECU searches from external devices may be disabled. This is for internal processes such as system checks. In such a case, click "Cancel" once and restart the procedures from 1. later.
- **5** The communication with the ECU starts and the acquisition of product operation data starts.

SM	RTASSIST Direct
Getting inform Communicating t is initializing	ation so please be patient. g Engine ECU 1/1 it. (LIFE)
Communicating t is initializing	g Engine ECU 1/1 it. (LIFE) Cancel

Example screen

- **6** When the communication with the ECU is complete, the below message appears.
 - Click "Yes (Y)" to display the product operation data after saving it on your PC.
 - Click "No (N)" to display the product operation data without saving it.



- **Point** As no information related to location, specific information on individuals, voice, or image is included in the product operation data, product operation data is not considered personal information. * In Japan
- 7 Click "OK". The memo entry screen is displayed.

nput	
mer information can be filled in.	(22)
Enter up to 200 characters (single- or double-spaced characters usable)	
Next	, *
	mer information can be filled in. Enter up to 200 characters (single- or double-spaced characters usable)

Point Even you select "Cancel" in the memo screen, the product operation data is saved. You can edit the memo with the saved data after saving the data. **8** Then, enter the connection purpose.

Select the most suitable item from the choices.

Operation Machine Information	
Please select connected purpose.	
Connected purpose Visit S Prev Next Click	• Use this as a filter when you use or search the obtained product operation data.
Operation Machine Information	 To obtain data for training and practise, select "Training/test" to keep it
Connected purpose Visit	data.
Maintenance / Inspection Delivery Campaign / Measure Training / Test	

9 Then, the operating hours check screen is displayed.

Click "OK". The collection information is displayed. Click "Change". The operating hours entry screen is displayed.

P Operation Machine Information	
The operating hours on this E	CU is
0.00 hr	
Is this time correct?	
OK Change	
There is the possibility th were reset if the ECU wa	at the hours is replaced.

Operating hours check screen

Reason for Confirmation

- The operating hours of the machine is the most important item of the product operation data.
- When maintenance using the service ECU is performed, the information in the ECU is reset.

10 When there is no operating hours information in the ECU information, the warning screen is displayed.

Click "Input". The operating hours entry screen is displayed. Click "Cancel" to display product operation data without saving it.



Screen when the operating hours cannot be confirmed

Reason for Entry

- The operating hours of machine is the most important item of product operation data.
- There are many cases in which the operating hours of the 3G controller is not recorded.
- **11** After manually entering the operating hours by controlling the button, click the "Save" button. The collection information display screen is displayed.



Important If you select "Cancel" in the operating hours manual entry screen, product operation data is not saved.



Summary of flow up to saving product operation data

without saving

11.3 Display Screen of Product Operation Data

- Access to all ECU on the same CAN network, and display the saved product operation data. (Even if the saved product operation data is in multiple ECU, it is displayed in one screen.)
- The model is displayed in the stored information in the ECU.
- The model of the machine equipped with multiple ECU is displayed under the model of the "Machine ECU".
- The historical data saved in the engine ECU is also collected and displayed as product operation data.

• "Lifetime Data" Display Screen of Product Operation Data

Product Operation D	ata (Display) 👌 🔹 🔤 OFF LINE Active C	ode				
/lenuToolBar	# × Historical Data Lifetime Data					
Historical Data	Pistorical Data - Lifetime Data					
Lifetime Data	Save Data Disp Ref Data Disp Ave [Disp Maintenance Info Exce	el Out			
Map Table	A:GET DATA DISP	A:	A:	REF DATA DISP	B:YEAR AVERAGE	CO
Log Data	Description	Value	Unit	Value	Avarage	Co
avy solo	DateTime	2015/10/27 14:51:41				
	VehicleSignatureType	4TNV94HT-ZXSRA				
	VehicleIdentificationNumber	00117				
	TotalEngineHour	0.00	h			
	TotalEngineHours(h)	40.00	h			
	ManufacturingTestDate	110121				
	Total ECU Run Time	0.50	h			
	Total Engine Hours	0.00	h			
	Engine Trip Run Hours	0.00	h			
	Engine Warning Total Run Hours	0.00	h			
	Engine Warning Trip Run Hours	1	142			
	·					

• "Map Table" Display Screen of Product Operation Data

- This is the display screen for product operation data stored as the map table. (The maximum display for maps is 16 rows x 16 columns.)
- The historical data for the existing engine is also collected and displayed as product operation data.
- The display can be selected and changed when the multiple map table information is saved.





MenuToolBar a >	Histo	rical Da	ata - <mark>M</mark>	ap Tabl	le									
ECU Information	RPM	-Load	Data V	Vith Co	nditions	s [h]				•				
Diagnostic Codes		-		W		W	E	ngine	Speed[r/min]			N	
Freeze Frame Data			600 -	1000 -	1300 -	1600 -	1900 -	2200 -	2500 -	2800	Total	(%)	0 -	25%
Diagnostic Tests		0.0-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Data Logging		20.0-	0.0	0.0	22.0	23.0	24.0	12.0	4.0	0.0	85.0	20.6		
Historical Data		40.0-	0.0	21.0	30.0	31.0	29.0	22.0	8.0	0.0	141.0	34.2		
	5	50.0-	0.0	17.0	22.0	23.0	22.0	19.0	10.0	0.0	113.0	27.4		
Lifetime Data	te[9	60.0-	0.0	9.0	12.0	13.0	10.0	9.0	7.0	0.0	60.0	14.6		
Map Table	Rat	70.0-	0.0	0.0	2.0	3.0	5.0	2.0	1.0	0.0	13.0	3.2		
Log Data	pad	80.0-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
ECI I Structures	L C	90.0-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		2 22
Eco on dentes	gine	Total	0.0	47.0	88.0	93.0	90.0	64.0	30.0	0.0			1	0 20
System Settings	E	(%)	0.0	11.4	21.4	22.6	21.8	15.5	7.3	0.0				
		0 -								-	- 10			
		25%												
		-								0	- 20			
						1.0								

The scale value of the bar graph can be changed to 25%, 50% and 100%.

SMARTASSIST-Direct											
File(F) View(V) O	peration(O)	Tool(T) H	elp(H)							
🔝 🔝 Pro luct Ope	ration Data [OFF	FLI	NEN	o C	ode	s			
🎓 Graph Scale Set											
Horizontal axis		Scale Select	30.0	6.1		30.0	6.1	1 11	30.0	6.1	
Title	Scale Select	0-25%	14.8	3.0		14.8	3.0		14.8	3.0	
Engine Speed [rpm]	0-25% -	0-25%	5.6	1.1		5.6	1.1		5.6	1.1	
Vertical axis		0-100%	1.4	0.3	10 20	1.4	0.3		1.4	0.3	05 50 75
	Coole Colent				10 20			20 40			25 50 75
Facine Load Data 19/1					Exan	nple	for so	creen c	hang	е	
Engine Load Rate [%]	0-25%										
Set Cance	1										

• "Log Data" Display Screen of Product Operation Data

- Two display systems are supported: save the time of the event occurrence and save the values per unit time.
- The displayed data can be divided by ECU and type of data.
- The historical data saved in the engine ECU is also collected and displayed as product operation data.

I Example for ECU SelectionDisplay2 Product Operation Data SelectionDisplay

		1 2
SMARTASSIST-Direct		
File(\underline{E}) View(\underline{V}) Tool(\underline{T}) Help(\underline{E}	±)	
🔝 🔝 Product Operation Data (I	Display) 🔳 🖢 OFF LINE No Code	
MenuToolBar ☞×	Historical Data - Log Data	
News	Engine Stop Warning Status Logging	
Historical Data	No. / Data(B) Save Ti	me(Hr) Log Data Select
Lifetime Data	1 000000000010000	1.20 All ECU
	2	1.10 Engine Stop Warning Status Logging -
Map Table	3 Display up to 50 lines	1.15 Model: 4TNV98-ESDB6
Log Data	4 000000000000000	1 5 SerialNo: H0824
	⊆ 00000000010000	1 10
	AILECU	- Starter Restraint Status Logging -
	All ECU	Starter Restraint Status Logging
	Engine	Starter Restraint Factor
	Filter by ECU	Filter by item

By right-clicking the "Factor (D)" box, the data display can be changed to binary, decimal and hexadecimal numbers.



• Function buttons on the accumulated information screen

- 1 🔁 : Print the screen. (Refer to [6.2.2])
- [2] Figure 3: Save a screenshot in PNG format. (Refer to [6.2.3])
- 3 📄 : Save the complete historical data in CSV format. (Refer to [6.2.4])
- **4** Save Data Disp : Select and display the save data.
- **5 Ref Data Disp** : Select and display the reference data.
- 6 Ave Disp : Comparison with the average values per model and year of shipment.
- 7 Maintenance Info : Maintenance information display
- 8 Excel Out : Out in Excel-format.
- Sector Sector

Product Operation Da	ata (Display) 🗃 🔷 🖶 OFF LINE Active C	ode	/			
uToolBar Historical Data	* × Historical Data - Lifetime Data	7 /				
Lifetime Data	Save Data Disp Ref Data Disp Ave D	Disp Maintenance Info Exce	el Out			
Map Table	A:GET DATA DISP	A:	A:	REF DATA DISP	B:YEAR AVERAGE	Π
Log Data	Description	Value 2015/10/27 14:51:41	Unit	Value	Avarage	4
	VehicleSignatureTure	4TNI/04HT-7YSR4			/	
	VehicleIdentificationNumber	00117		/		
	TotalEngineHour	0.00	h	/		t
	TotalEngineHours(h)	40.00	h	/		
	ManufacturingTestDate	110121		/		1
	Total ECU Run Time	0.50	h	/		1
	Total Engine Hours	0.00	h	/		t
	Engine Trip Run Hours	0.00	h	/		
	Engine Warning Total Run Hours	0.00	h	/		
	Engine Warning Trip Run Hours	1				T
	The second se					

11.4 Operation for the product operation data (Life time data)

Function buttons and display screen

Operation Tool Bar

- 1 🔁 : Print the screen. (Refer to [6.2.2])
- 2 🔚 : Save a screenshot in PNG format. (Refer to [6.2.3])
- 3 💼 : Save the complete historical data in CSV format. (Refer to [6.2.4])

• Function Buttons

- **Save Data Disp** : A: Call up and display the saved data in the collected (saved) data display box.
- 5 RefData Disp : Display the saved data as reference.
- 6 Ave Disp : Display and compare the "Average values per model and year of shipment".
- **Maintenance Info** : Display the maintenance information.
- 8 Excel Out : Export the screen information in the specified EXCEL format.
- 9 Selection Item Clear : Clear the maintenance information.

123	4	5 6	7	8				9
SMARTASSIST Direct	/ /	/ /	/					
Fre(E) View(V) Tool(I) Help(H)		/	/				/
				/				
Product Operation	on Data 3 - OFF LINE N	o Codes	/					/
MenuToolBar Ø×	Historical Data - Lifetime Data	T						
News	Save Data Disp. Ref Data Disp. Av	Maintenance Inf	Excel Out	a				Clear Trin Time
Historical Data		A A A A A A A A A A A A A A A A A A A	of lexcer ou		DVEAD AVEDAGE	COMPARE	T.	
Lifetime Date	Description	Value	Unit	Value	Avarage	Compare	MaintenanceInfo	Detail View
Lifetime Data	DateTime	2015/12/09 17:29.46						
Map Table	VehicleSignatureType	4TNV98-ESDB6						
Log Data	VehicleIdentificationNumber	H0824						
	TotalEngineHour	0.00	h					
	TotalEngineHours(h)	5.00	h					
	ManufacturingTestDate	110524						
	Total ECU Run Time	654.30	h				Exist	Details
	Total Engine Hours	0.00	h				Exist	Details
	Engine Trip Run Hours	0.00	h				None	Details
	Engine Warning Total Run Hours	0.00	h				Exist	Details
	Engine Warning Trip Run Hours	0	-				Exist	Details
	Comment							₽×
Baudrate : Type:4TNV9	98-ESDB6 / SNo:H0824							ONLINE

● Main Box	
10 A:GET DATA DISP	: Display the collected or saved data.
11 Description	: Display the product operation data name.
12 Value	: Display the saved value.
13 Unit	: Display the unit.
14 REF DATA DISP	: Display the reference data.
B:YEAR AVERAGE	: Display the "average values per model and year of shipment".
6 Average Value Comparison] : Display the comparison of the values $\ 10$ and $\ 15$.
Clear	: Display the maintenance information clear box.
18 Maintenance Information	: Display the maintenance information "Details" button.

Comment Box

III Comment box: Display the comment for the clicked product operation data.

• Maintenance information screen

		10 11	12	13	14	<u>15</u>	16	17	18 19
1 SMARTASSIST-Direct	/		/		/	/	/		tole
File(E) View(V) Tool(() Help(H)		/		/	//	/		
	/	/ /			/	/			/
Product Operation	ion Data 🖪 🚸 😁 OFF LINE N	o/Codes			/	/			
MenuToolBar & ×	Historical Data Lifetime Data		/		/		/		
News	Save Data Dian Data Dian			- /	/	/	/	/	Cines Trip Time
Historical Data	Save Data Disp Rer Data Disp A	ve bisp (maintenance ini	Excerci						Caear mp nine
Tistorical Data	Description	A Value	A: Unit	KEF DATA DISP Value	Avarage	COMPARE Compare	Clear	MaintenanceInfo	Detail View
Lifetime Data	DateTime	2015/12/09 17:29:46					100000		
Map Table	VehicleSignatureType	4TNV98-ESDB6							
Log Data	VehicleIdentificationNumber	H0824							
-	TotalEngineHour	0.00	h						
	TotalEngineHours(h)	5.00	h						
	ManufacturingTestDate	110524							
	Total ECU Run Time	654.30	h					Exist	Details
	Total Engine Hours	0.00	h					Exist	Details
	Engine Trip Run Hours	0.00	h					None	Details
	Engine Warning Total Run Hours	0.00	h					Exist	Details
	Engine Warning Trip Run Hours	0	-					Exist	Details
							/		
	Comment						/		e ×
							*		
Baudrate : Type:4TNV	98-ESDB6 / SNo:H0824								ONLINE

Display the Save Data and Reference Data

Product operation data stored in your PC can be displayed in comparison.

Utilization example

- Check the temporal change for the same machine.
- Check the difference in the usage condition with the other machine.

SMARTASSIST-Direct				
File(F) View(V)	Tool(T)	Help(H)		
Product 0	Operation [Data 🖪 🛊 📼 OFF LINI	E No Codes	
MenuToolBar		∉ × Click		
Historica	al Data	Historical Data - Lif	etime Data	
Lifetime	e Data	Save Data Disp	Ref Data Disp	Ave Disp Maintenance Info Excel Out
🎁 Data Select		\checkmark		From the coverd product operation data
Model	Serial No	Date Time	E.	From the saved product operation data,
3TNV88C-DTR	00151	27 October,2015 12:15:45		select the data that refers to the below
3TNV88C-DTR	00151	27 October,2015 12:17:32		information and click "Select"
3TNV88C-DTR	00151	27 October,2015 12:18:20		information and click Select .
41NV94H1-ZXSRA	00117	20 October,2015 20:20:08	-	• Model
Explanation				Machine number
Display of the m	iemo enterec	at the time of saving produ	ICT	
	_			 Date when data was saved
Click	Se	lect		Description (memo)

The get (read) data is displayed in the left row, the reference data is displayed in the right raw.

A:GET DATA DISP Description	A: Value	A: Unit	REF DATA DISP Value
DateTime	2015/10/27 15:07:30		2015/09/04 16:37:02
VehicleSignatureType	4TNV94HT-ZXSRA		4TNV94HT-ZXSRA
VehicleIdentificationNumber	00117		00404
TotalEngineHour	0.00	h	
TotalEngineHours(h)		h	
ManufacturingTestDate	110121		
Total ECU Run Time	0.70	h	488.20
Total Engine Hours	0.00	h	0.00
Engine Trip Run Hours	0.00	h	0.25
Engine Warning Total Run Hours	0.00	h	0.00
Engine Warning Trip Run Hours	1	-	1

Unlike serial numbers, product operation data for different models can be displayed as the reference data.

A:GET DATA DISP Description	A: Value	A: Unit	REF DATA DISP Value
DateTime	2015/10/27 14:21:10		-
VehicleSignatureType	4TNV94HT-ZXSRA		
VehicleIdentificationNumber	00117		

A:GET DATA DISP Description	A: Value	A: Unit	REF DATA DISP Value
DateTime	2015/10/27 15:07:30		2012/09/20 17:01:41
VehicleSignatureType	4TNV94HT-ZXSRA		4TNV98T-ZNSA

Remark Only the matched product operation data items with the get (read) data are displayed for the reference data.

Example: If the CONSTRUCTION and the AGRICULTURE data are displayed, the common engine-related product operation data is displayed.

(In case of having the engine-related product operation data in both data.)

This is a function to export product operation data in the specified EXCEL format.

Assuming that the data is submitted to the end user and attached to the work report, it has the below characteristics.

- Output the required information in easy-to-see format.
- Unlike the output in CSV file format, reprocessing is not necessary.

Get Date]			
User ID						
E	ngine			Vel	nicle	
Engine Signature Type			Vehicle Signatur	е Туре		
Engine Identification Number				Vehicle Identification Number		
Operating time			Operating time (Operating time (Manual input)		
A:Description	Value	Unit	REF Data	(Reference) B:Average	Compare A/B (%)	
Total ECU Run Time		6				
ENGINE RUN HOURS				5 		
ENGINE WARNING TOTAL RUN		1				



Note Output the lifetime data information and the map table information (2D and 3D) in EXCEL. (You cannot export the log data.)

Click the "EXCEL Out" button, select the save location, and then click the "Save" button.

SMARTASSIST-Direct					
File(F) View(V) Tool(T) Help	(H)				
🔝 🔝 Product Operation Data	(Display) 📑 🖶 📼		lo Codes	0.11	
MenuToolBar & ×				Click	
Historical Data	Historical Data - Li	fetime Data			
Lifetime Data Save Data Disp Ref Data Disp Ave Disp Maintenance Info Excel Out					
$\overline{\mathbf{v}}$	-				
Weight Save As Image: Save As Image: Save As Image: Save As	★ ★★ Search Desiton		The default f	ile name contains	
Organize New folder	je v	0	information of th	e obtained (saved) data	
A 🛠 Favorites			in the below orde	er.	
Downloads			• Model		
Recent Places		E	- Carial numb	o.r.	
Computer Documents			• Senai numb	er	
▷ ♪ Music			 Date obtain 	ed	
Pictures Videos Videos Videos			The file name ca	n be changed.	
Computer		-			
File name: *.bmp		-			
Save as type: Bitmap Files (*.bmp)		-			
Hide Folders Click	Save	ncel			

Point The file created by "EXCEL Out" can be handled between PCs without processing "Export" and "Import" in the "Saved data Function".

• Display the Average Values

- **1** The average values calculated from the product operation data uploaded to the center are displayed.
- **2** The ratio of the collected data (right) for the average values is calculated.
- **3** The average values are calculated per model and year of shipment in the beginning of every month and automatically downloaded when logging in to the SMARTASSIST-Direct with an active Internet connection.

Save Data Disp Ref Data Disp Ave Disp	Maintenance Info Ex	cel Out			
A:GET DATA DISP Description	A: Value	A: Unit	REF DATA DISF Value	B:YEAR AVERAGE Avarage	COMPARE Compare
DateTime	2016/04/22 10:54:04				
VehicleSignatureType	8LV370Z				
VehicleIdentificationNumber	0555				
TotalEngineHours(h)		h			
ManufacturingTestDate	<mark>110810</mark>				
Total ECU Run Time	66.45	h		166.15	39.994
Total Engine Hours	13. <mark>1</mark> 0	h		114.34	11.4571
ENGINE WARNING TOTAL RUN HOURS	0.00	h		0E	nan
ENGINE WARNING TRIP RUN HOURS	0.00	h		0E	nan

2

1

12. ECU Replacement and Update the ECU Software

When replacing the ECU or updating (overwriting/correcting) of the ECU software is required, it is necessary to write the software to the new ECU (Service ECU) or ECU equipped machine. The software can be downloaded by accessing the center through the SMARTASSIST-Direct, and a record of the download is uploaded to the center.

More specifically, it is necessary to perform the following things from (1) to (5) below, from the SMARTASSIST-Direct menu.

- 1 Download the ECU software
- 2 Read and save the setting values (correction values) from old ECU
- 3 Write to the software's ECU
- Copy settings (correction values) to the new ECU
- **5** Upload the replacement and update data

However, there is no need to perform steps (2) to (4) when making a software update (overwriting/correction)

■ECU Replacement

When replacing the ECU, the above indicated procedure is displayed in diagram 12-1.

- This procedure is displayed when writing the software to the ECU on-site, and the replacement of the 2 old ECU with the new ECU is performed after reading and saving the old ECU setting values.
- When sending an Service ECU with software that has already been written to in advance to an on-site location, the order of procedures for 2 and 3 are switched. Replacement of the old ECU with the new ECU is performed after reading and saving the old ECU setting values.
- If there is difficulty in reading the setting values (correction values) from the old ECU, history information cannot be continuous. Refer to page 236 for details.
- For 4TNV94FHT engines, besides engine ECU, there is another ECU called DCU (Dosing control unit) that controls SCR. When replacing the DCU or updating the DCU software, take the same steps as ECU.
- When performing steps 11 through 5, make sure to check your PC has an Internet connection.



Note An Internet connection is required to access the center.

■Updating software (overwriting/correcting)

Fig. 12-2 shows how to update (overwrite/correct) the ECU software.

• When performing steps **1** through **5**, make sure to check your PC has an Internet connection.





12.1 ECU Software Download

In order to reprogram new software when updating or replacing the ECU, the procedure for downloading the software from the center is described below.

1 Select "INDUSTRIAL ENGINE" from the Start Menu.

SMARTASSIST-Direct	
Direct	Terminal Information / Job Edit Language : English -
AGRICULTURE INDUSTRIAL ENGINE ← Click	Exit CANMAR DIAGNOSTIC TOOL

2 Select "Engine".



3 Click "ECU Soft Download" on the tab "Data Management".

	SMARTASSIST-Direct		×
Click	File(F) View(V) Tool(T) Help(H)		
	🔊 Main Menu 🖪 🚸 📼		
	MenuToolBar	x	
Click	ECU Access Data Management Diagnostic Data (Display) Product Operation Data (Display) ECU Soft Download	<work (controller)="" be="" can="" communicating="" done="" ecu="" that="" the="" with="" without=""> The communication connection to the center is included and a necessary function is included.</work>	
·	Tim Data Download Customization Manual Search Saved Data	< <ecu download="" operation="" software="">> It executes it for the renewal of the ECU exchange or software. It is necessary to write it in ECU by "ECU connection operation".</ecu>	L L
	Exchange Information Management Database Access Advanced Settings/Additional Settings Job Assistant	Comment	ð ×
	INDUSTRIAL ENGINE / Engine / E	pert ONLI	NE

- 4 The ECU Reprogramming Screen is displayed.On this screen, select one of the below processes.
 - ECU Exchange (Onboard reprogramming)
 - ECU Exchange (Offboard reprogramming)
- } When writing to a service ECU

..... When writing to an ECU equipped machine

• Software Update (Onboard reprogramming)

Select ECU replacement (Onboard reprogramming) when writing in a state where the Service ECU is equipped on the machine, or ECU replacement (Offboard reprogramming) when writing to an offboard Service ECU. For example, Click "ECU Exchange (Off board Reprogramming)".

FCU Soft Download	
Please choose a part to change.	
ECU Exchange (Onboard Reprogramming)	
ECU Exchange (Off board Reprogramming)	-Click
Software Update (Onboard Reprogramming)	
Cancel	
Software for reprogramming Service ECU from a bench top with a special cable and power supply.	

5 The selection screen for the ECU writing type is displayed.

Select the type of work and click "Next".

ECU Reprogramming (Work Type)	
Select the desired work and clic	k the "Next" button.
R	epair Unscheduled Maintenance - Clicl
Investig	ation © Troubleshooting
	Quality Conformance Test
Meas	sures © Quality Improvement
	Initial Quality Assurance
	Service Campaign
	Recall Campaign
Explan	ation © Training
	Demonstration
Prev	Next

Click

Note During training, please select "Training". (To distinguish from actual operations) **6** The Software Download Screen is displayed.

Enter the model and Serial No, and click "Send".

The following shows the engine type 4TNV94FHT as an example.

Software download (ECU list download)	
1. Input Model and Serial No. 2. Click Send.	
License Serial No. :	
User ID:	
Field : INDUSTRIAL ENGINE	
Product Category : Engine	
Write Mode : ECU Exchange (Off board Reprogramming)	
Model : 4TNV94FHT-NJSL	Ente
Serial No:000101	
Prev Send Cancel	
 Click	

Remark If you do not enter either the model or machine number, a message (on the left) is displayed.



Note Make sure that the Internet connection is active.

7 The ECU software download process starts.



Remark ECU software is found on the center that corresponds to the entered model and Serial No, the below message is displayed. Click "OK", and enter the model and Serial No again.





8 A screen is displayed that lists the downloaded ECU software.

The following screen displays engine model 4TNV94FHT as an example which has two controllers; ECU (engine) and DCU (SCR for after-treatment).

The displayed ECU Serial No. is the serial No. of the currently equipped ECU.

When there is only one controller, the one downloaded software is displayed.

 ECU Soft 1. Clic 2. Clic The 3. Input 4. Clic 	 ECU Soft Download (Details) 1. Click the DL check box. 2. Click the "ECU Serial No" column. The input dialog box opens. 3. Input the hardware serial number of your service ECU. 4. Click "Send". 						
L	icense Serial No:						
	User ID:						
	Field :	INDUSTRIAL ENGINE					
F	Product Category :	Engine					
	Write Mode :	ECU Exchange (Off board	d Reprogramm	ing)			
	Model :	4TNV94FHT-NJSL					
	Serial No :	000101					
DL	Controller Name	Parts Name	Service ECU	ECU Serial No.	Notes		
	ENGINE	ECU ASSY, 94FHT-NJSL		160201B4017	Details		
	SCR	DCU ASSY, 94FHT-NJSL		160201T4017	Details		
		Prev Send	Cancel				

Remark When selecting "Software Update (Onboard Reprogramming)", it is not necessary to enter the "ECU serial No.". Therefore, the "ECU serial No." entry screen is not displayed.

9 Click "ECU Serial No." of the controller you want to exchange.

ST ECU Soft	Download (Details)	10 18 3		1 The 2	X		
1. Clic 2. Clic - The 3. Inpu 4. Clic	 Click the DL check box. Click the "ECU Serial No" column. The input dialog box opens. Input the hardware serial number of your service ECU. Click "Send". 						
L	icense Serial No:						
	User ID :						
	Field :	INDUSTRIAL ENGINE					
F	roduct Category :	Engine					
	Write Mode :	ECU Exchange (Off board	Reprogramm	ing)			
	Model :	4TNV94FHT-NJSL					
	Serial No :	000101		Click			
DL 🔽	Controller Name	Parts Name	Service ECU	ECU Svrial No.	Notes		
	ENGINE	ECU ASSY, 94FHT-NJSL		160201B4017	Details		
	SCR	DCU ASSY, 94FHT-NJSL		160201T4017	Details		
		Prev Send	Cancel				

10 The Data Setting Screen is displayed.

Input the hardware serial number of your service ECU to set to then click "Set".

🎲 Data Set		
Data Name	ECU Serial No.	
Current	160201B4017	
Set To	17013Q4003	- Entei
Click →	Set Cancel	

11 Click "Details" on the ECU Software List screen, and information regarding the software for download is displayed.

🎲 ECU Soft	Download (Details)			-			
1. Clic 2. Clic - The 3. Inpu 4. Clic	 Click the DL check box. Click the "ECU Serial No" column. The input dialog box opens. Input the hardware serial number of your service ECU. Click "Send". 						
F	4. Click Send . License Serial No : User ID : Field : INDUSTRIAL ENGINE Product Category : Engine Write Mode : ECU Exchange (Off board Reprogramming) Model : 4TNV94FHT-NJSL						
-	Serial No	: 000101			Click		
DL \	Controller Name	Parts Name	Service ECU	ECU Serial No.	Noves		
	ENGINE	ECU ASSY, 94FHT-NJSL		17013Q4003	Details		
	SCR	DCU ASSY, 94FHT-NJSL		160201T4017	Details		
	Prev Send Cancel						

12 Confirm the detailed information, and click "OK".

SMARTASSIST-Direct						
	Model : 4TNV94FHT-NJSL					
5	Serial No : 000101					
Present ECU S	erial No.:17013Q	4003				
Software Name 🗸	Present State	Latest State				
ECU Type P/N	129F33-75100	129F33-75100				
ApliSoftPno	1R179A-10102	1R179A-10102				
MapSoftPno	129F33-74102	129F33-74103				
IndSoftPno	129F01-79000	129F01-79000				
CstMapPno						
Clic	k → OK					

13 On the ECU Software List screen, select "DL" next to the ECU software that you wish to download. Click "Send", and the download process starts.

Secu Soft Download (Details)	COLUMN TWO IS NOT	1000	C. CONTRACTOR	X		
 Click the DL check box. Click the "ECU Serial No" column. The input dialog box opens. Input the hardware serial number of your service ECU. Click "Send". 						
License Serial No:						
User ID:						
Field :	INDUSTRIAL ENGINE					
Product Category :	Engine					
Write Mode :	ECU Exchange (Off boar	rd Reprogramm	ning)			
Model :	4TNV94FHT-NJSL					
Select Serial No :	000101					
DL Controller Name	Parts Name	Service ECU	ECU Serial No.	Notes		
☑ ENGINE E	CU ASSY, 94FHT-NJSL		17013Q4003	Details		
	OCU ASSY, 94FHT-NJSL		160201T4017	Details		
	Prev	Cancel				

Remark If you click "Send" before the download has been selected, the below message is displayed.



14 The ECU software download process starts.

SMARTASSIST-Direct			X			
The ECU Soft is being downloaded. Please wait for a while.						
	Model : 4TNV	94FHT-NJSL				
S	erial No : 00010	01				
Download state	:	0 / 1				
Download Time	: Cancel	00:00:04				
	Canoci					

Remark If you click "Cancel" during download, the below message is displayed.



15 A message box notifies you when the download of the ECU software has finished.

Click "OK".





16 If you want to delete the downloaded ECU software, click "Exchange Information Management", and then "Exchange Cancel" from "Data Management" tab.



17 Check the operation you want to cancel, and click "Send".



18 The upload process is started.



19 A message box notifies you when the upload has finished.



Remark This is the screen when ECU software download is canceled.

ECU Software Download Supplemental Information

Supplement: When selecting "Agriculture" "Construction Machinery" from the start menu.

→After the selection screen for the type of work for the ECU writing, the selection screen for "Machine" and "Engine" is displayed.

* Then, the process continues in the same way as from the selection "INDUSTRIAL ENGINE" from the Start Menu.



Supplement: This screen is displayed if more than one ECU software is available for download.

1	ECU Soft [Download (Details)			x		
Ŧ	 Click the DL check box. Click the "ECU Serial No" column. The input dialog box opens. Input the hardware serial number of your service ECU. Click "Send". 						
	Lie	cense Serial No:					
		User ID :					
		Field : AGF	RICULTURE				
	Pr	oduct Category : Trac	tor				
		Write Mode : Soft	ware Update (Onboard R	eprogramming)			
		Model : EG1	105				
		Serial No : 000	125				
	DL 🗍	Controller Name	Parts Name	Service ECU			
		ENGINE	ECU CMP,94HT-ZXPRN	129927-75900	1		
		HMT	CONTROL UNIT, HMT	1A8280-50900	1		
		UFO	CONTROL UNIT, UFO	1A8280-50900	1		
		DRA	CONTROL UNIT, DRA	1A7805-50900	1		
	< [me			•		
		Pre	v Send Cancel				

12.2 Reading and Saving the Setting Values (Correction Values) of the Old ECU

The data downloaded from the center does not include the setting values (correction values) of the historical data. Therefore, to enable continuance of the historical data upon replacing the ECU, the setting values (correction values) need to be copied from the previous ECU (old ECU).

The following indicates the procedure for reading and saving the original ECU setting values (correction values) for each product.

If there is difficulty in reading the setting values (correction values) from the original ECU, the historical data (total operating timeand PM accumulated amount etc.) cannot continue. Regarding support related to PM deposition amount, refer to "13.4 Replacing Constituent Parts
Processing after ECU replacement (when you cannot carry-over from the old ECU) in the TNV Tier4 Service Manual.

1 Click "Set Value Copy" on the tab "ECU Access".



Copying the settings:

It is necessary to readout, save and write the setting values (e.g. correction values) off all products.

Note Make sure that the product or the ECU is connected.

2 The ECU Search in Progress Screen is displayed.



If there is difficulty in reading the setting values (correction values) from the original ECU, "Abnormal communiation (Error code 1002)" is displayed.

3 The ECU Connection Screen is displayed. Click "Start".

ſ	P ECU Access		
	Data Rate	© 250k	⊚ 500k
	ECU Applicatior	00:Engine	• •
	ECU Search	ECU S/N	1200000000
Click —	Star	t	Cancel

* Engine model 4TNV94FHT has two controllers which are engine ECU and ECU for SCR. Each controller has setting values (correction values) so if you want to exchange or overwrite engine ECU, select "Engine" from "ECU Application", and then click "Start". If you want to exchange or rewrite ECU for SCR, select "SCR" from "ECU address", and then click "Start".

ST ECU Access			BCU Access		
Data Rate	◎ 250k	© 500k	Data Rate	⊚ 250k	o 500k
ECU Applicati	ion 00:Engine	• •	ECU Applicat	ion 3D:SCR	-
ECU Search	ECU S/N	160701Q4019	ECU Search	h ECU S/N	160701Q4016
SI	tart	Cancel	S	tart	Cancel

4 The ECU Data Collection in Progress Screen is displayed.

🎲 Wa	ait Information	
	SMARTASSIST Direct	
Ge	etting information so please be patient.	
Co	mmunicating Engine ECU 1/1	
It is	s initializing it. (IO control)	
	Cancel	

5 The ECU Exchange Screen is displayed.

Select "ECU Data Backup (ECU to PC)". Click "Next".

elect the operation mode.	
ECU Backup (ECU to PC)	
ECU Write (PC to ECU)	•
◎ Old ECU data	
Manual Input	
Prev Next	Cancel

6 Screen of the ECU data to be saved is displayed. Click "Next".

ECU Exchange Present data is preserved in the file. Engine Type(Vehicle Manufacture) 4TNV94FHT-NJSL Engine S/N 000101 Engine Compensation 1 109 Engine Compensation 2 109 Engine Compensation 3 102 Engine Compensation 4 102 74 Engine Compensation 5 Injection Timing Adjustment 60 Engine Type 4TNV94FHT-NJSL Engine S/N(Vehicle Manufacture) CH4M31H000101 DPF P/N 129F01-16000 **DPF Installation Date** Qcode MHA00000 Manufacturing Tester ID VAA300 1 Prev Next Cancel Î Click

7 The process ends, and a message box with the procedures after ECU exchange is displayed. Click "OK". The Main Menu Screen is displayed.



Remark The screen changes to the End of ECU Exchange (ECU \rightarrow PC) Screen.

8 To delete (cancel) the setting values (correction values) of old ECU which are saved in your computer, by overwriting to new setting values, the old data is automatically deleted so you do not need to do any action.
12.3 ECU Software Reprogramming

The procedure for reprogramming the software downloaded from the center to the ECU is described below.

1 Connect the ECU to a PC and click "ECU Reprogramming (Flash)" from the ECU Access tab on the Main Menu. Make sure that the ECU is turned on (*1).



- *1 Turn on the key switch of the implement for "onboard reprogramming" to activate the ECU while turning on the switch of the power supply device connected to the ECU for "offboard reprogramming".
- **Note** In the 4TNV94FHT engine, when replacing both the ECU and DCU by writing in to the actual machine, do not connect the service ECU and the service DCU at the same time. The reason is as follows. There are two communication speeds for this controller (250 kpbs and 500 kpbs) which can be switched by turning on and off the power depending on the communication speed on the driven machine when writing in. If you connect the ECU and DCU at the same time with different initial communication speeds of the service controller, because it does not match each other by turning on and off the power, a communication error will be detected. When replacing the ECU and DCU by writing in to the actual machine, replace them one at a time.

2 The ECU Write Screen is displayed.

When writing to an empty ECU, select "First Time ECU Programming". When updating the controller, select "Update".

For example, click "First Time ECU Programming".



3 The selection screen for the write files after the download completed is displayed. Select the relevant file, and click "Next".

The following screen is an example of writing to ECU of the machine.

ĺ	🔋 Reprogram Writ	ing File Selection		1.09 0.01	
	Please sele	ect the writing object.	•		
	Targe	et All Target	• Mode	All Model	•
	Model	ECU Serial No.	Serial No	ECU Type	Date
Click —	AG6114	11A1700138	100008	IO REAR	2016-05-31
	AG6114	11A2600138	100008	TRAVEL R	2016-05-31
		Clickr→	Next Ca	ncel	

4 If you want to write machine ECU, the below screen appears.



5 The following steps show the example when writing software to the engine ECU. Select the downloaded file from the writing object, then click "Next".

🔋 Reprogram Writing File Selection						
Please select the writing object.						
Target All Target - Model All Model -						
Model	ECU Serial No.	Serial No	ECU Type	Date		
4TNV94FHT-NJSL	170131Q4002	000101		2017-01-31		
4TNV94FHT-NJSL	170131Q4004	000101		2017-02-02		
Prev Next Cancel						
	(Î Click				

6 Click "OK", and the ECU software writing process starts.

The following screen is an example of writing to ECU of the machine.

Model	:	4TNV94FHT-NJSL
SerialNo	:	000101
ECU Type	:	
ECU Serial No.	:	170131Q4004
Prev	,	OK Cancel

7 A screen is displayed that confirms that the ECU is turned on. Click "OK".



8 The ECU Software Reprogramming Process In Progress Screen is displayed.



* The information inside the box changes.

If there is a power failure or wiring disconnection during ECU writing, refer to section 15 on page 249 for the operating procedure.

9 The ECU Software Programming Process In Progress Screen is displayed. (Not displayed in the case of engine ECU)



* Select depending on the situation.

10 After sowtware reprogramming process is completed, the following screen is displayed with QCODE. Write down the QCODE to the label attached to the service ECU.

In the case of the ECU for SCR (=DCU), write down the old QCODE. When you finish writing down, click "OK".



Remark For new writing, the below message is displayed.



11 If you are over writing, the following window will show after it is complete.

Select how you want to send the information (Automatically or Manually).



12 If you continue writing to other controllers, select "Yes".



If you want to continue the writing, the screen switches to writing mode screen. Cick "No" to go back to the main menu. **13** The procedure for how to handle when there is a power failure or communication failure due to wiring disconnection is described.

The following screen is displayed when there is a communication failure.



After fixing the communication error, click "OK" and write again.

14 Repair the cause of the failure and click "OK", then the screen returns to the following screen. Click "Cancel". If you click "Next" by accident, refer to section 20 on page 251.

Reprogram Writing File Selection						
Please select the	writing object.					
Target All Target Model All Model						
Model	ECU Serial No.	Serial No	ECU Type	Date		
4TNV86CT-DTR	120906B1362	00136		2015-04-23		
	Prev	Next Cance	el 🔶 Click			

15 If the abnormal data is still there, select "Re-write (When error occurs while writing it)"

📬 Reprogram Writing Mode Selection	
Please select a method of writing.	
First Time ECU Programming	
Update	
Abnormality has occurred in the write operation.Please execute Re-write.	
Re-write(When error occurs while writing it)	— Click
Cancel	
Writes to the new empty auxiliary equipment controller.	

16 The screen to select the downloaded file to be written is displayed again. Reset the ECU power supply. Choose the file you want to write and click "Next".

ĺ	🐐 Reprogram Wri	ting File Selection			
	Please sel	ect the Re-writing ob	ject.		
	Targ	et All Target	• Mode	I All Model	•
	Model	ECU Serial No.	Serial No	ECU Type	Date
Click —	AG6114	11A1700138	100008	IO REAR	2016-06-08
			De	late the select	d file. Delete
		Prev	Next Ca	ncel	
		1100		j	
			Click		

Remark When recovering from a communication failure, always turn off the power supply and turn it on again.

• Do not click "Delete". Clicking "Delete" opens the below window.

Be sure to click "No". If you click "Yes", be careful because "Writing During Abnormality" prevents you from writing and the ECU can no longer be used.

*	Reprogram W	riting File Selection					
I	Please se	lect the Re-writing ob	ject.				
	Target All Target Model All Model						
	Model 🛛	ECU Serial No.	Serial No	ECU Type	Date		
	AG6114	11A1700138	100008	IO REAR	2016-06-08		
	 Abnormality has occurred in the write operation of the previous. If you continue the process, write the previous file is deleted, you can no longer write implementation abnormal. Do you want to continue with the process? 						
				les No			
			Del	lete the selecte	ed file Delete		
		Prev	Next Car	ncel			

17 The ECU Software Reprogramming Process Start Screen is displayed. A screen is also displayed that confirms that the ECU is turned on. Click "OK".

Thecking the contents writte	n		×		
Are you sure you w	ant to writ	te in this content	?		
Model	: 4TN	V98-ESDB6		SMAI	RTASSIST-Direct
SerialNo	: 8200	07		0	Make sure that ECU is connected and power on.
ECU Type	:				Click -
ECU Serial No	: 1234	4567890			
Prev	OK	Cancel			

18 The ECU Software Programming Process In Progress Screen is displayed. When it is complete, the Q Code Notification Screen is displayed the same as the notification in section 10 on page 246. The following procedures are the same as those described on page 246.

proces	sing	[L_PAR]	
Copyri	ght : Y Comp	′anmar uter Co	Co., Ltd.	Yokogawa

* The information inside the box changes.

19 If the ECU power supply is not reset before software writing, the following screen is displayed. In this case, click "OK" and reset the ECU power supply. The screen returns to the screen indicated in section 17 on page 250.

SMAI	RTASSIST-Direct
×	Communication with ECU failed.
	Click → OK

20 During the procedure for communication failure in section 14 on page 248, if you accidentally click "Next" and "OK", instead of "Cancel" as shown on the following screen, the screen shown in next page is displayed. When you click "Next" and "Cancel", then the screen will return to the screen shown in section 14 on page 248.

Reprogram Writ	ing File Selection	1000	-			
Please select the writing object.						
Target All Target Model All Model						
Model	ECU Serial No.	Serial No	ECU Type	Dat		
AG6114	11A1700138	100008	IO REAR	2016-0		
AG611 🕸 🗘	hecking the contents written	100008	TRACTLE			
Ar	e you sure you wan	t to write in this	s content?			
	Model	: AG6114				
:	SerialNo : 100008					
	ECU Type	IO REAR				
	Controller Code	: 11A170013	8			
•	Click↔	OK	Cancel ←	Click		
	Clickœ	Next Cance	2			

21 The following screen is displayed. Click "OK".

🚏 Reprogram Writi	ing File Selection							
Please select the writing object.								
Targe	et All Target	• Model A	ll Model	•				
Model 🔽	ECU Serial No.	Serial No	ECU Type	Date				
AG6114	11A1700138	100008	IO REAR	2016-06				
AG61 Che	cking the contents written	1000008		-06				
Ar	SMARTASSIST-Direct	to write in this	Content?	×				
	Abnormality has occurred in the write operation of the previous. Please select Re-write at the Reprogram Writing Mode Selection.							
			Click→ O					
	Prev	ОКС	ancel	Þ				
	Prev	Next	el					

22 The screen returns to the same screen as shown in section 14 on page 248. Click "Cancel". The following procedures are the same as section 15 on page 249.

116	🔋 Reprogram Writing File Selection					
	Please select the writing object.					
	Target All	Target	Model All Model			
ł.	Model 🗸	ECU Serial No.	Serial No	ECU Type	Date	
	4TNV86CT-DTR	120906B1362	00136		2015-04-23	
		Prev	Next	el 🔶 Click		

12.4 Copy the Setting Values (Correction Values) to the New ECU

After reprogramming the software to the Service ECU, it is necessary to copy the saved result of the setting values (correction values) read from the original ECU (old ECU) done in step 12.2. It is unnecessary to perform these procedures when unable to read in step 12.2.

The procedure for copying the setting values (correction value) of the original ECU saved in the PC to the new ECU is discribed.

1 Click the "Set Value Copy" on the tab "ECU Access".

	SMARTASSIST-Direct	
	File(F) View(V) Tool(T) Help(H	()
	🔝 Main Menu 🗇 🚸 📼	
	MenuToolBar 🕫 ×	
	ECU Access	<operations are="" communicating="" ecu="" performed="" that="" when="" with=""></operations>
	Diagnostics (Execution)	
	Product Operation Data (Acquisition)	The communication connection to the center is included and a necessary function is not included.
	ECU Reprogramming (Flash)	
Click	Set Value Copy	
	Component Replacement (Execution)	<copying during="" ecu="" exchange="" settings="" the="">></copying>
	Get option ECU information	Reading and writing setting values and correction values for ECU exchange. It is
	Performance inspection (Agri)	necessary to write the software to the new ECU in advance.
	Data Management	
	Database Access	
	Advanced Settings/Additional Settings	
	Job Assistant	Comment 5 ×
	AGRICULIURE / Tractor / Expert	UNLINE



Note Make sure that the product or ECU is connected.

The ECU Connection Screen is displayed. Click "Start".

	🌾 ECU Access		
	Data Rate	© 250k	o 500k
	ECU Application	00:Engine	e •
	ECU Search	ECU S/N	170131Q4004
lick →	Start		Cancel

2 The ECU Exchange Screen is displayed. Select "ECU Write (PC to ECU) Old ECU Data". Click "Next".



3 The selection screen for the ECU Data File is displayed.

Select the applicable file, and click "Next".



4 The ECU Exchange Output Check Screen is displayed.

Click "Write".

Are you sure you want to write this	data in ECU?	
Classification	Value	
Engine Type(Vehicle Manufacture)	4TNV94FHT-NJSL	
Engine S/N	000101	
Engine Type	4TNV94FHT-NJSL	
Engine S/N(Vehicle Manufacture)	CH4M31H000101	
	129F01-19000	
	129F01-19800	
	129F01-19800	
	129F01-19590	
	129F01-19500	
Total Engine Hours	1.65	
Engine Warning Total Run Hours	0.00	
Engine Warning Trip Run Hours	0.00	
Number Of Engine Run Times	5	

5 The Password Check Screen is displayed. Enter the password, and click "Set".



6 A message box notifies you when the writing process has finished. Click "OK".



7 A screen with the necessary procedures after the ECU writing process is displayed. Follow the on-screen instructions, and click "OK".



8 A message box notifies you that a report was created. Click "OK".



Remark The screen changes to the End of ECU Exchange (PC \rightarrow ECU) Screen.

12.5 Upload of ECU Replacement and Software update Information

After writing the software to the ECU, access the center and upload the replacement data.

Software Update (Onboard reprogramming) are automatically uploaded, but ECU replacement (Onboard/Offboard reprogramming) is not automatically uploaded after overwriting. Therefore it is necessary to upload manually.

12.5.1 Automatic Upload Operation of ECU Software update Information

In case of Software Update (Onboard Reprogramming), the procedure for automatic upload is displayed.

1 Select "INDUSTRIAL ENGINE" from the Start Menu.



2 Select "Engine".

SMARTASSIST-Direct		
SMARTASSIST Direct	i Language :	Terminal Information / Job Edit English •
AGRICULTURE		Exit STIC TOOL



3 The upload process is started.



4 A message box notifies you when the upload has finished.



Remark The screen switches to the End of ECU Software Upload Screen.

12.5.2 Manual Upload Operation of ECU Replacement Information

In case of replacing the ECU (Onboard/Off board Reprogramming), the procedure for manual upload is displayed. For details on how to cancel exchange, refer to [14.3 Replacement (or downloaded data) cancellation process].

1 Select "INDUSTRIAL ENGINE" from the Start Menu.



2 Select "Engine".



3 The Main Menu Screen is displayed.

SMARTASSIST-Direct	
File(E) View(V) Tool(T) Help	(<u>H</u>)
🔊 Main Menu 🗗 🖶 📼	
MenuToolBar #	x
ECU Access	<operations are="" communicating="" ecu="" performed="" that="" when="" with=""></operations>
Diagnostics (Execution)	
Product Operation Data (Acquisition)	The communication connection to the center is included and a necessary function is not included.
ECU Reprogramming (Flash)	
Set Value Copy	
Component Replacement (Execution)	<-Operations, data and adjustments used during maintenance or error diagnostics>>
Get option ECU information	View data from the ECU, save ECU data and perform operational tests and adjustment.
Performance inspection (Agri)	
Data Management	
Database Access	
Advanced Settings/Additional Settings	
Job Assistant	Comment ® ×
AGRICULTURE / Tractor / Expe	rt ONLINE

4 Click "Exchange Information Management" and "Exchange Complete" on the tab "Data Management".



9

- **5** The Exchange Information Management (Completion) Screen is displayed.
 - Operation Name selection

Select "ECU Exchange (onboard reprogramming)" "ECU Exchange (offboard reprogramming)" "Software Update (onboard reprogramming)", "Replace Pump (copy correction values)", "Replace Nozzle (copy correction values) etc.

- 2 Checkbox when completing replacement
- 3 Model
- 4 Serial No
- 5 ECU Name
- 6 Write Mode
- 7 Download Data
- 8 Write Data
- 9 Send button

Operation Na	ame All Item			•
Complete	Model	Serial No	ECU Serial No.	ECU Name
	4TNV94CHT	00992	0123456787	ENGINE
Z	3	4		5

6 Click the "Task Name" tab and select the task name of the Replacement Completion you want.



7 Select the task name of the Replacement Completion you want, then tick the check mark for "Completed" and when the ECU software corresponding to Replacement Completion appears, select the task name of the Replacement Completion you want and click "Send".

Complete	Model	Serial No	ECU Serial No.
\rightarrow	4TNV94CHT-XNRNQ	00992	0123456787

8 The Exchange Information Management (Cancel) process starts.



9 A message box notifies you when the Exchange Information Management (Cancel) process has finished. Click "OK".



10 Click "OK" on the Exchange Information Management (Cancel) Process Completion Message Box. The Exchange Information Management (Cancel) Screen is displayed.

Click "Cancel" to return to the Main menu.

PExchange information ma	nagement (Completion)[Tra	aining]			
Operation Name	All Item		•		
Complete	Model	Serial No	ECU Seria	al No.	
<				۲	
The selected wo	rk is transmitted a	is "completed" to th	ne		
Please set the w	ork name, select	the displayed work	Send	Cancel	- Click
and click "Send".					

11 The Main Menu screen starts up, and the Exchange Information Management (Cancel) task is finished.

SMARTASSIST-Direct	
$File(\underline{F}) View(\underline{V}) Tool(\underline{T})$	Help(<u>H</u>)
🔝 Main Menu 🗗 🖶 📼	
MenuToolBar ☞ ×	
ECU Access Data Management	<operations be="" can="" connected="" ecu="" performed="" that="" the="" without=""></operations>
Diagnostic Data (Display)	The communication connection to the center is included and a necessary function is included.
Product Operation Data (Display)	
ECU Soft Download	
Trim Data Download	
Manual Search	< <viewing data="" ecu="" saved="" the="">></viewing>
Saved Data	
Exchange Information Management	View and compare the saved data of ECU in the diagnostics, start screen Data that has been collected at other workstations must be imported from the Data Management menu using "Save Data"
Database Access	
Job Assistant	
•	Comment &×
< <u> </u>	
AGRICULTURE / Tractor /	Expert ONLINE

13. Part Exchange

When replacing parts related to the exhaust emission for the engine models shown in the table below, it is necessary to write the correction values to the engine ECU ua sing SA-D.

	Fuel injection system	Applicable	Parts requiring correction value writing during ECU exchange					
Engine model		Regulation	2G eco pump	Denso injector	Bosch injector	DPF DOC/SF	Rail	SCR
3/4TNV**-Z, E, A, C	Yanmar 2G	Tier3	0	-	-	-	-	-
	Yanmar 2G							
3TNV**F	eco pump	Tier4	0	-	-	-	-	-
4TNV94HT-Z	Denso CR	Tier3	-	0	-	-	-	-
4TNV94CHT	Denso CR	Tier4	-	0	-	0	-	-
4TNV94FHT	Denso CR	F-Tier4	-	0	-	0	-	0
3/4TNV**C/CT/CHT	Bosch CR	Tier4	-	-	0	0	0	-

For engine ECU exchange, refer to [12. ECU Replacement and Update the ECU Software].

13.1 2G Eco Pump Replacement Process

- When replacing the fuel injection pump for 3/4 TNV**-Z, E, A, C and 3TNV**F equipped with Yanmar 2G Eco pump, it is necessary to write the pump correction values to the engine ECU.
- The pump correction values are registered separately by engine model, machine number and ECU serial number. It is necessary to download the values from the center to your PC.



13.1.1 Pump Replacement (Download)

The procedure for downloading the pump correction values registered at the center to your PC is displayed.

1 Select "INDUSTRIAL ENGINE" from the Start Menu.



2 Select "Engine".

SMARTASSIST-Direct	
SMARTASSIST Direct	Terminal Information / Job Edit Language : English -
AGRICULTURE	Exit TITE TOOL

3 The Main Menu Screen is displayed.

SMARTASSIST-Direct		
File(F) View(V) Tool(T) Help(H)		
🔊 Main Menu 🖪 🔹 📼		
MenuToolBar & ×		
ECUAccess		
Data Management	<optional (communication="" acquisition="" associated="" center)="" connection="" data="" of="" the="" to=""></optional>	[
Database Access	Indispensable data to the program operation is received automatically	
Advanced Settings/Additional Settings		
.lob Assistant		
		1
	< <find and="" download="" manuals="" technical="">></find>	
	Itdata retrieval downloads it to the manual link using it.	
	NEPCOM MANAGEMENT RECORDER NO AND RECORD AND AND RECORD RECEIPTION DO NO.	
	Comment	ē x
	oonment	
INDUSTRIAL ENGINE / Engine / Expe	ert	ONLINE

4 Click "Part replacement (download)" on the tab "Operations with ECU Disconnected".

Click —	 SMARTASSIST-Direct File(E) View(Y) Tool(I) Help(E) Main Menu MenuToolBar X MenuToolBar X ECU Access Data Management Diagnostic Data (Display) Product Operation Data (Display) ECU Soft Download Trim Data Download Manual Search Saved Data Exchange Information Management Database Access Advanced Settings/Additional Settings Job Assistant 	d) Coperations that can be performed without the ECU connected> The communication connection to the center is included and a necessary function is included. Second and the correction values for replacement components>> Download the pump correction values. The correction value of the injector for repair is not available for download. Comment
	AGRICULTURE / Tractor / Expert	ONLINE

5 The Parts Replacement/Adjustment Screen is displayed.

Move the cursor over "Pump Replacement (Trim Data Copy)".

🗊 ECU Reprogramming	
Please choose a part to change.	
Pump Exchange (Trim Data Copy)	
Cancel	

6 Move the cursor over "Pump Replacement (Trim Data Copy)". It will turn blue. Then click it.

ST ECU Reprogramming	
Please choose a part to change.	
Pump Exchange (Trim Data Copy)	Move the cursor
Cancel	
"When the trim data is written in ECU, it is necessary t "ECU Access" menu."	o do by

7 The selection screen for the pump replacement type is displayed.

Click the type of work, and click "Next".

🚏 Pump Exchange (Work Type)				
Select the desired work and click the "Next" button.				
Repair © Unscheduled N	1aintenance			
© Scheduled Mai	ntenance			
Investigation 🗢 Troubleshootin	Ig			
© Quality Confor	mance Test			
Measures 🔍 Quality Improve	ement			
💿 Initial Quality A	ssurance			
© Service Campa	iign			
© Recall Campaig	(n			
Explanation 💿 Training 🔶 🔶 Cli	ck			
Demonstration				
Prev Next Cancel				
······				
Click				



8 The pump replacement (pump data download) screen is displayed.

Enter the model and Serial No, and click "Send".

Pump exchange (pump information download)	
To determine the part number of conductive parts to replace, 1.type 3.Please press the submit button to enter the unit 2.number.	
License Serial No. :	
User ID:	
Field : INDUSTRIAL ENGINE	
Product Category : Engine	
Exchange Parts :Pump Exchange (Trim Data Copy)	
Model : 4TNV98T-ZNSA	
Serial No:X0004	Ente
Prev Send Cancel	





Note Make sure that the Internet connection is active. Confirm that the replacement process for the ECU is complete before you write the correction values.

9 The pump replacement (correction value download) process starts.

🌮 SMARTASSIST-Direct
The ECU Soft is being downloaded. Please wait for a while.
Cancel

Remark If no data is found on the center that corresponds to the entered model and Serial No, the below message is displayed. Click "OK", and enter the model and Serial No again.



10 A screen is displayed that lists the downloaded pump replacements (correction value download). Click the serial number box.

Pump exchange (correction value downloa	id)	18	
 Click the desired check b Insert the parts code and Click "Send". Note: The last digit of the parts 	oox. I hardware seria arts code can di	Il number of your regula	ar pump.
License Serial No :			
User ID:			
Field : IN	IDUSTRIAL ENG	SINE	
Product Category : E	ngine		
Exchange Parts : Pump Exchange (Trim Data Copy)			
Model : 4	TNV98T-ZNSA		
Serial No:X	0004		
DL 🗸 🛛 Parts Name	Pump No.	Pump Serial No.	Notes
Fuel injection pump	729928-51300		Details
		f Click	
	Prev	Send Cancel	

11 The Data Setting Screen is displayed.

Enter the serial number of the fuel injection pump, and click "Set".

🗊 Data Set					×
Data Name					3)
Current					
Set To					
Click	\rightarrow	Set	Cancel	1	••
h				Ēr	nte

Click "Details" on the pump replacement (correction value download) screen.

Pump exchange (correction value download)			
 Click the desired check box. Insert the parts code and hardware serial number of your regular pump. Click "Send". Note: The last digit of the parts code can differ. 			
License Serial No:			
User ID:			
Field : INDUSTRIAL ENGINE			
Product Category : Engine			
Exchange Parts : Pump Exchange (Trim Data Copy)			
Model : 4TNV98T-ZNSA			
Serial No : X0004			
Pump No. Pump Serial No. Notes			
mp 729928-51300 21001231XX04 Details	— Click		
Prev Send Cancel			

The pump replacement information for download is displayed.

SMARTASSIST-Direct				
Model : 4TNV98T-ZNSA				
Serial No :X0004				
Par	t Code : 729928	-51300		
Part Ser	ial No.:210012	31XX04		
Description	Value			
PumpPartPno	729928-51300			
PumpSerialNo	21001231XX04			
CorrectionValue1	139			
CorrectionValue2	125			
CorrectionValue3 125				
CorrectionValue4 100				
CorrectionValue5 135				
CorrectionValue6 116				
CorrectionValue7 124				
CorrectionValue8 100				
CheckSum 1601				
Click	→ ОК			

14 On the Pump Replacement (Correction Value Download) List screen, select "DL" next to the part name that you wish to download data for. Click "Send", and the download process starts.



15 The pump replacement (correction value download) process starts.



16 A message box notifies you when the pump replacement (correction value download) process has finished. Click "OK".



13.1.2 Pump Replacement (Execution)

Displays the pump correction values downloaded to your PC for writing to the ECU.

1 Click "FIE Replacement (Execution)" on the tab "ECU Access".



2 After displaying the ECU Search In Progress Screen, the ECU Access Screen is displayed. Click "OK".



3 The Standby Information Screen is displayed.

Wait Information		
SMARTASSIST Direct		
Getting information so please be patient. Communicating Engine ECU 1/1 It is initializing it. (IO control)		
Cancel		

4 The ECU Write Screen is displayed.

Move the cursor over "Pump Replacement (Trim data write)".

<pre> % ECU Reprogramming[Training] </pre>	
Please choose a part to change.	
Pump Exchange	TNV-84_88_98
Cancel	

5 Move the cursor over "Pump Replacement (Trim data write)". It will turn blue. Then click it.



6 The Operation Selection Screen is displayed. Select "Download data". Click "Next".

Remark In case of the manual input data, start work from (10).



7 The Download File Reading Screen is displayed.

Select the applicable file, and click "Next".

🎲 LOAD DO	WNLOADED FILE[Training]	
Pump	Exchange File	
7295	38-513401007001	48.excp 🔹
	Prev Next C	Cancel
	Click	

8 The selection screen for the pump replacement Trim data write file is displayed. Confirm the contents, and click "Write".

sites will be	1	1		
Classification	No.	Value	Notes	
Part No		729538-51340		
Part Serial No		100700148		
Part Compensation	1	100		
	2	105		
	3	105		
	4	120		
	5	87		
	6	99		
	7	105		
	8	100		2
	9	1000		



rk For processing afterwards, start work from (14).
9 The Operation Selection Screen is displayed.

Select "Manual input". Click "Next".



10 The selection screen for the pump replacement Trim data write file is displayed.

Click the value box. The entry screen is displayed and you can manually enter the correction values.

Please input data.				
-				
Classification	No.	Value	Notes	
Part No			← Click	
Part Serial No				
Part Compensation	1			
	2			
	3			
	4			
	5			
	6			
	7			
	8			
	9			
		Inita Can	• • • • • • •	

11 The Data Setting Screen is displayed.

Manually enter the correction values.

	Data Set[Training]	
	Data Name	
	Current	
	Set To	
	Click → Set	Cancel
	K	Enter
pata Set[Training]		P Data Set[Training]
Deta Name PU	MP POWER COMPENSATION 1	Deta Name Collation Data
Max	255 100	Current 0000 h
Set To		Set To 0 0 0 h
Min		
Note	ection Quantity Compensation	Click → Set Cancel
Click	-> Set Cancel	

12 When you finished manual entry of the pump replacement correction values, check them and then click "Write".

Please input data.				
Classification	No.	Value	Notes	-
Part No		123456		
Part Serial No		12345		
Part Compensation	1			
	2	110		
	3	180		1
	4	180		
	5	120		
	6	100		
	7	150		
	8	60		-
	9	1000		
Pr	ev	Write	ancel	

Remark If a value has not been entered or if the check data is incorrect, the below error screen is displayed.



13 The Password Check Screen is displayed.

Enter the password, and click "Set".

19 Password authentication	
Enter your password.	
User ID	
Password	- Enter
Click → Set Cancel	

14 A message box notifies you when the writing process has finished.

Click "OK".



15 A screen with the necessary procedures after the ECU writing process is displayed.

When the confirmation screen is displayed, click "OK". Turn ON/OFFthe ECU by following the on-screen instructions.



16 Confirm the content and click "Yes" to automatically send the replacement completion data to the management server. Click "No" to send it manually at a later time. Click "OK". When you click "No", refer to chapter 14.

SMA	RTASSIST-Direct	
?	Select "Yes" to transmit the update/exchange information automatically to server. Select "No" to manually transmit the update information to server.	
	Click → Yes No	Click

17 A message box noting you that a report was created will appear.

Click "OK".



18 Click "OK" on the message box for the report creation notification to return to the below page. Click "Cancel" to return to the main menu.

Pump Exchange	TNV-84_88_98
Cancel	

13.1.3 Automatic Upload Operation when Pump replacement (execution) completed

1 Select "Industrial Engine" from the Start Menu.





2 Select "Engine".

SMARTASSIST-Direct		
SMARTASSIST Direct	i Language :	Terminal Information / Job Edit English
AGRICULTURE		Exit THE TOOL

Note

Make sure that the Internet connection is active.

3 The Replacement Data Upload Screen is displayed, and the upload process starts.



4 A message box notifies you when the upload has finished.



13.2 Parts Exchange Process for CR OEM Engine manufactured by Denso

13.2.1 Injector Exchange Process for 4TNV94HT-Z/4TNV94CHT/4TNV94FHT

- When exchanging the common rail (CR) injector nozzle manufactured by Denso and equipped in 4TVN94HT-Z*(Tier 3 compliant) and 4TNV94CHT-* (Tier 4 compliant) and 4TNV94FHT-* (Final Tier4 compliant) engines, it is necessary to write the correction values of the injector nozzle to the engine ECU.
- Correction values of the injector nozzles are registered separately by the engine ECU. It is necessary to set the correcton value when replacing the ECU or the injector nozzle.



1 Select "INDUSTRIAL ENGINE" from the Start Menu.



2 Select "Engine".

SMARTASSIST-Direct	i Language :	Terminal Information / Job Edit English
AGRICULTURE		Exit THE TOOL

3 The Main Menu Screen is displayed. Click "Component Replacement (Execution)" on the tab "ECU Access".



4 After displaying the ECU Search In Progress Screen, the ECU Access.

Secu Find				
The connection to the ECU is being checked. This may take a few seconds.				
	Cance	1		
		7		
PECU Access	$\mathbf{\vee}$	×		
Data Rate	© 250k	<mark>◎ 5</mark> 00k		
ECU Search	ו			
S	tart	Cancel		

5 Confirm that the ECU type is "00: engine", and click "Select".

ECU Access		
Data Rate	⊚ 250k	o 500k
ECU Search	h	
S	tart	Cancel

6 The Standby Information Screen is displayed.

🎲 Wa	it Information			
	SMARTASSIST Direct			
Getting information so please be patient. Communicating Engine ECU 1/1 It is initializing it. (DI)				
	Cancel			

The ECU Write screen is displayed. (It depends on the engine model)
 Click "Injector Nozzle Exchange (Writing Correction Value)".
 The following write screen is for 4TNV94HT-Z.

PECU Reprogramming[Training]		
Please choose a part to o	change.	
Injector No.	zzle Exchange	TNV-94HT
	Cancel	
Trim data is written in EC	:U.	

The following write screen is for 4TNV94CHT.

Click "Injector Nozzle Exchange (Writing Correction Value)".

F Component Replacement (Execution)	
Please choose a part to change.	
Injector Nozzle Exchange	Engine
DPF Exchange	Engine
SF Exchange	Engine
DOC Exchange	Engine
Cancel	
Trim data is written in ECU.	

The following write screen is for 4TNV94FHT.

Click "Injector Nozzle Exchange (Writing Correction Value)".



8 The Selection Screen for Injector Replacement Correction Value Data Entry is displayed.

The following write screen is for 4TNV94FHT.

Check if there is a cylinder that requires correction.

11 1	NJECTOR Exchange				Į	- • ×	
In	put the compensation da	ata.					
	Cylinder No. Inje	ctor Model Code	Inje	ctor Cori	rection V	alue 🔺	
1	43		05E50	C120703	000A0F0	00000	
2	43		15E80	D00EAFE	F9F2E60	00000	Confirm
3	43		0AE10	2F9E1EB	EAE2D8	000000	Commit
4	43		1AEF0	B06F9FC	F8F8F90	00000	
•						÷.	
F	Position of flywheel	Injector Pattern		[]]	[
	, affaida o Diabhaida	Ν	10.1	No.2	No.3	No.4	
(0	Left side CRight side		sylinder	cylinder	cylinder	cylinder	
		flyWheel					
				Da	ataInput	Complete	

Note The displayed data are the correction values written to the currently connected ECU.

9 If you expand the width of the cells on the selection screen for the injector replacement correction data entry, you can confirm the values in the below table.

19 INJECTOR Exchange		S INJECTO	OR Exchange		. +			O C X
Input the compensi	sation data.	Input t	he compensation da	ata.				
Cylinder No.	Injector Model Code	• Moo	li Injector Cor	rrection Value	Injec	tor BCC	Data	-
1	43	43	05E50C12070300	00000000000000000000000000000000000000	BC			
2	43	43	15E80D00EAFEF	9F2E6000000	4A			1
3	43	43	0AE102F9E1EBE	AE2D8000000	89			100
4	43	43	1AEF0B06F9FCF	8F8F9000000	47			
Position of flywh Left side O Ri	ight side	Posit • Le	tion of flywheel ft side © Right side	Injector Patte	m No.1 cylinder ael	No.2 cylinder	No.3 cylinder ataInput	No.4 cylinder Complete

10 Confirm "Injector Pattern" and click "OK". Set the position of the flywheel, and confirm the position of the cylinders.

nput the comp	ensation data.					
Cylinder No.	Injector Mod	el Code	Injec	tor Correct	tion Value	
1	43		05E50C12	0703000A0	F000000	E
2	43		15E80D00	EAFEF9F2	E6000000	4
3	43		0AE102F9	E1EBEAE2	D8000000	8
4	43		1AEF0B06	F9FCF8F8	F9000000	4
Position of fly ● Left side €	wheel Injecto	flyWheel	1 nder cylind	er cylinder	No.4 cylinder	nplet

nput the comp	pensation dat	ta.					
Cylinder No.	Injecto	or Model Code		Injecto	or Correct	ion Value	
1	43		058	50C120	703000A0	F000000	E
2	43		158	80D00E	AFEF9F2	E6000000	4
3	43		OAE	102F9E	1EBEAE2	D8000000	8
4	43		1A	F0B06F	9FCF8F8F	9000000	4
Position of fl	wheel Right side	Injector Patter	n No.4 cylinder	No.3 cylinder	No.2 cylinder	No.1 cylinder fly ataInput Co	/Whe

Note This screen lets you understand the cylinder numbers easily.

11 When entering data manually, select "Manual Entry", select the cylinder that you wish to update, and click "Data Input"."

*	INJECTOR Exchange	a	FF 1 200			
1	nput the com	pensation data.				
	Cylinder No.	Injector Model Code	Injector Correction Value	Iniector BCC Data		
	1	43	05E50C120703000A0F000000	BC		
	2	43	15E80D00EAFEF9F2E6000000	4A		
	3	43	0AE102F9E1EBEAE2D8000000	89		
	4	43	1AEF0B06F9FCF8F8F9000000	47		
	Position of flywheel • Left side © Right side Injector Pattern No.1 Cylinder Cylinder Click DataInput Complete					

12 Manually enter the injector compensation value written at the top

of the new injector.

After entering, click "Write" to perform writing.





Remark If correction data values are not yet entered or entered incorrectly, the below error screen is displayed.



13 The Password Request Screen is displayed. Enter the password, and click "Set".

19 Password authentication		
Enter your password.		
Password	↓ ← El	nte
Click → Set Cancel		

14 When the writing of correction values is complete, the below screen is displayed.



15 After ECU writing is completed, the procedure required next is displayed.

When the confirmation screen is displayed, click "OK". Turn ON/OFF the ECU by following the on-screen instructions.

Turn the ECU power source ON after holding the power OFF for 10 seconds.



16 Confirm the content and click "Yes" to automatically send the replacement completion data to the management server. Click "No" to send it manually at a later time. When you click "No", refer to chapter 14.



17 A message box noting you that a report was created will appear.

Click "OK".



18 Click "OK" on the message box for the report creation notification to return to the below page. Click "Cancel" to return to the main menu.



13.2.2 Automatic Upload Operation when Injector (DENSO) Replacement (Execution) completed

1 Select "Industrial Engine" from the Start Menu.



2 Select "Small Land Engine".

SMARTASSIST-Direct		
SMARTASSIST Direct	i Language :	Terminal Information / Job Edit English •
		Exit TIC TOOL



3 The Replacement Data Upload Screen is displayed, and the upload process starts.



4 A message box notifies you when the upload has finished.



Note If you select the data manually, then refer to chapter 14 the following procedure.

13.2.3 Exchange 4TNV94CHT DPF/SF/DOC

■DPF Exchange Process

The procedure, "Start Menu (Industrial Engine → Small Land Engine)" →"Main Menu ("ECU Access"→"FIE Replacement (Execution)", is the same as [13.2.1 Injector Exchange Process for 4TNV94HT-Z/4TNV94CHT/4TNV94FHT]. Click "DPF Exchange".



When the screen below is displayed, click "OK".



Select "New" or "Reuse" for SF status.

Click the value cell and enter the part number and serial number of the SF.

DPF Excha	nge				×
Please	input data.				
SFInfor	mation ONew	Cle	earing	g	
	Classification	Va	alue		-
SF P/N				🔶 Glick	н
SF S/N				Chen	
DOC P	/N				
DOC S	/N				
Number	r Of SF Assist Regeneration	0			
Number	r Of SF Reset Regeneration	0			
Number	r Of SF Reset Regeneration Abort	0			
Reasor	n For SF Reset Regeneration Abort	0		-	
Number	Of SF Stationary Regeneration	0			
Number	r Of SF Stationary Regeneration Abort	0			
Reason	For SF Stationary Regeneration Abort	0			
	Prev Write Cancel				
		7	5	7	
ſ	🐐 Model Serial Input				
	SF Model				
	SF Serial No.				
	Set Cancel				

Click the value cell and enter the part number and serial number of the DOC.

Click "Write" to write the data to the ECU.



The Password Request Screen is displayed. Enter the password, and click "Set".

Password authentication	×	
Enter your password.		
Password	• •	 Ente
Click → Set Cancel		

When the writing of correction values is complete, the below screen is displayed.



After ECU writing is completed, the procedure required next is displayed.

When the confirmation screen is displayed, click "OK". Turn ON/OFF the ECU by following the on-screen instructions. Turn the ECU power source ON after holding the power OFF for 30 seconds.

SMARTASSIST-Direct	×
The write process is complete.	
Turn off the key, and turn on the key after 2 minutes. "After key is turnd off, ECU software will be reprogramed. "	
If the error lamp is carrying out continuous lighting even when the ECU power is turned off, please reset again.	
OK Click	

Confirm the content and click "Yes" to automatically send the replacement completion data to the management server. Click "No" to send it manually at a later time.



When the screen below is displayed, click "OK".

Exchange process is complete.

SMARTASSIST-Direct	SMARTASSIST-Direct
The report is made now.	The report was preserved.
Click → OK	Click → OK

When you select "automatic sending", then follow the same instruction as [13.3.2 Automatic Upload Operation when Injector (Bosch) Replacement (Execution) completed].

If you select the data manually, then refer to chapter 14 for the following procedure.

■SF/DOC Exchange

The procedure, "Start Menu (Industrial Engine → Small Land Engine)" →"Main Menu ("ECU Access"→"FIE Replacement (Execution)", is the same as [13.2.1 Injector Exchange Process for 4TNV94HT-Z/4TNV94CHT/4TNV94FHT]. Click "SF Exchange" or "DOC Exchange".





For "SF Exchange", present SF information (before exchange) is displayed and the data is read by PC.

Please check data.	
Classification	Value
SF P/N	129978-1640007
SF S/N	15CPA028M0
Number Of SF Assist Regeneration	0
Number Of SF Reset Regeneration	0
Number Of SF Reset Regeneration Abort	0
Reason For SF Reset Regeneration Abort	0
Number Of SF Stationary Regeneration	0
Number Of SF Stationary Regeneration Abort	0
Reason For SF Stationary Regeneration Abort	0
Number Of SF Recovery Regeneration	0
Number Of SF Recovery Regeneration Abort	0
Reason For SF Recovery Regeneration Abort	0





Select "New" or "Reuse" for SF status.

Click the value cell and enter the part number and serial number of the SF.

Click "Write" to write the data to the ECU.



For "DOC Exchange", present DOC information (before exchange) is displayed and the data is read by PC.

Classification	Value
DOC P/N	129978-1620007
DOC S/N	1616A007P0
Number Of DOC Assist Regeneration	0
Number Of DOC Reset Regeneration	0
Number Of DOC Reset Regeneration Abort	0
Reason For DOC Reset Regeneration Abort	0
Number Of DOC Stationary Regeneration	0
Number Of DOC Stationary Regeneration Abort	0
Reason For DOC Stationary Regeneration Abort	0
Number Of DOC Recovery Regeneration	0
Number Of DOC Recovery Regeneration Abort	0
Reason For DOC Recovery Regeneration Abort	0





Click the value cell and enter the part number and serial number of the DOC.



Enter the data in SF exchange or DOC exchange then click "Write" to write the data to the ECU.

The Password Request Screen is displayed. Enter the password, and click "Set".

Password authentication	X
Enter your password. User ID	
Password	← Ente

When the writing of correction values is complete, the below screen is displayed.



After ECU writing is completed, the procedure required next is displayed.

When the confirmation screen is displayed, click "OK". Turn ON/OFF the ECU by following the on-screen instructions. Turn the ECU power source ON after holding the power OFF for 30 seconds.



Confirm the content and click "Yes" to automatically send the replacement completion data to the management server. Click "No" to send it manually at a later time.



When the screen below is displayed, click "OK".

Exchange process is complete.

SMARTASSIST-Direct	SMARTASSIST-Direct
The report is made now.	The report was preserved.
Click → OK	 Click → OK

When you select "automatic sending", then follow the same instruction as [13.3.2 Automatic Upload Operation when Injector (Bosch) Replacement (Execution) completed].

If you select the data manually, then refer to chapter 14 for the following procedure.

13.2.4 Exchange 4TNV94FHT DPF/SF/DOC/SCR/NOx Sensor or other parts

■DPF Exchange Process

The procedure, "Start Menu (Industrial Engine → Small Land Engine)" →"Main Menu ("ECU Access"→"FIE Replacement (Execution)", is the same as [13.2.1 Injector Exchange Process for 4TNV94HT-Z/4TNV94CHT/4TNV94FHT]. Click "DPF Exchange".



Present DPF information (before exchange) is displayed and the data is read by PC.

Please obeck data	-	
lease check data.		
Classification	Value	ECU Name
SF P/N	129F01-16400	Engine
SF S/N		Engine
DOC P/N	129F01-16200	Engine
DOC S/N		Engine
Number Of SF Assist Regeneration	0	Engine
Number Of SF Reset Regeneration	0	Engine
Number Of SF Reset Regeneration Abort	0	Engine
Reason For SF Reset Regeneration Abort	0	Engine
Number Of SF Stationary Regeneration	0	Engine
Number Of SF Stationary Regeneration Abort	0	Engine
Reason For SF Stationary Regeneration Abort	0	Engine
Number Of SF Recovery Regeneration	0	Engine
Number Of SF Recovery Regeneration Abort	0	Engine
Reason For SF Recovery Regeneration Abort	0	Engine
Total Time For SF Regeneration	0.00	Engine
SE Lload Time	0.00	Engine

Î





If model No. or serial No. of SF or DOC was not able to read, the following screen is displayed. Enter the numbers and then click "Next".

A Model No. or a Serial No. was not able to be read. Please register information.		
License Serial No.	1	
User ID	:	
Field	: INDUSTRIAL ENGINE	
Product Category	: Engine	
Write Mode	: DPF	
DOC Model	: 129F01-16200	
DOC Serial No.	: 167BA102P0	3AAD
SF Model	: 129F01-16400	l.
SF Serial No.	: 167CA081M0	38E1
Select "New" or "Reuse" for SF status.

Click the value cell and enter the part number and serial number of the SF.

SFInformation	© New	Clea	ring
Maan Alabelean	Classification	Valu	e ECU Name
SF P/N			
SF S/N			Engine
DOC P/N			Engine
DOC S/N			Engine
Number Of SF Assist	Regeneration	0	Engine
Number Of SF Reset	Regeneration	0	Engine
Number Of SF Reset	Regeneration Abort	0	Engine
Reason For SF Rese	et Regeneration Abort	0	Engine
Number Of SF Station	nary Regeneration	0	Engine
Number Of SF Station	nary Regeneration Abort	0	Engine
Reason For SF Statio	onary Regeneration Abort	0	Engine
Number Of SF Recov	very Regeneration	0	Engine
Number Of SF Recov	ery Regeneration Abort	0	Engine
Reason For SF Reco	overy Regeneration Abort	0	Engine
Total Time For SF Re	generation	0.0	Engine
SF Used Time		0.0	Engine
		0	Engine

Set Cancel	
	Set Cancel

Click the value cell and enter the part number and serial number of the DOC.

Click "Write" to write the data to the ECU.

S DPF Exchange	the second s		O B X
Please input data.			
SFInformation • New		Clearing	
Classification		Value	ECU Name
SF P/N		129F01-16400	Engine
SF S/N		167CA081M0	Engine
DOC P/N		••••••	Engine
DOC S/N			
Number Of SF Assist Regeneration		0	Engine
Number Of SF Reset Regeneration		0	Engine
Number Of SF Reset Regeneration Abort		0	Engine
Reason For SF Reset Regeneration Abort		0	Engine
Number Of SF Stationary Regeneration		0	Engine
Number Of SF Stationary Regeneration Abor	rt	0	Engine
Reason For SF Stationary Regeneration Abo	ort	0	Engine
Number Of SF Recovery Regeneration		0	Engine
Number Of SF Recovery Regeneration Abort	t	0	Engine
Reason For SF Recovery Regeneration Abo	ort	0	Engine
Total Time For SF Regeneration		0.00	Engine
SF Used Time		0.00	Engine
		0	Engine -
Prev	Write Cancel		
	A		
	CIICK	\mathbf{X}	
		×	
🎓 Model Serial Input			x
DOC Model			
DOC Serial No.			
Se	tCancel		

Enter the data in DPF exchange, and then click "Write" to write the data to the ECU.

The Password Request Screen is displayed. Enter the password, and click "Set".

Password authentication	× •••
Enter your password.	-
	- Ento
Click → Set Cancel	

When the writing of correction values is complete, the below screen is displayed.



After ECU writing is completed, the procedure required next is displayed.

When the confirmation screen is displayed, click "OK". Turn ON/OFF the ECU by following the on-screen instructions. Turn the ECU power source ON after holding the power OFF for 30 seconds.



Confirm the content and click "Yes" to automatically send the replacement completion data to the management server. Click "No" to send it manually at a later time.



When the screen below is displayed, click "OK".

Exchange process is complete.

SMARTASSIST-Direct		SMARTASSIST-Direct
The report is made now.		The report was preserved.
Click → OK	$\overline{}$	Click → OK

When you select "automatic sending", then follow the same instruction as [13.3.2 Automatic Upload Operation when Injector (Bosch) Replacement (Execution) completed].

If you select the data manually, then refer to chapter 14 for the following procedure.

SF/DOC Exchange

The procedure, "Start Menu (Industrial Engine → Small Land Engine)" →"Main Menu ("ECU Access"→"FIE Replacement (Execution)", is the same as [13.2.1 Injector Exchange Process for 4TNV94HT-Z/4TNV94CHT/4TNV94FHT]. Click "SF Exchange" or "DOC Exchange".





For "SF Exchange", present SF information (before exchange) is displayed and the data is read by PC.

Please check data.		
Classification	Value	ECU Name
SF P/N	129F01-16400	Engine
SF S/N	167CA081M0	Engine
Number Of SF Assist Regeneration	0	Engine
Number Of SF Reset Regeneration	0	Engine
Number Of SF Reset Regeneration Abort	0	Engine
Reason For SF Reset Regeneration Abort	0	Engine
Number Of SF Stationary Regeneration	0	Engine
Number Of SF Stationary Regeneration Abort	0	Engine
Reason For SF Stationary Regeneration Abort	0	Engine
Number Of SF Recovery Regeneration	0	Engine
Number Of SF Recovery Regeneration Abort	0	Engine
Reason For SF Recovery Regeneration Abort	0	Engine
Total Time For SF Regeneration	0.00	Engine
SF Used Time	0.00	Engine
	0	Engine
DPF PM Accumulation Density_C	0.0000	Engine
DPF Ash Accumulation	0.0000	Engine
DPF Ash Accumulation_T	0.0000	Engine
Consumed Fuel Mass Since Last Active Regeneration	0.0000	Engine





Select "New" or "Reuse" for SF status.

Click the value cell and enter the part number and serial number of the SF.

Click "Write" to write the data to the ECU.

25 Information			·····
Classification	⊚ Cl	ear	ECU Nam
Classification SE D/N	Val	ue	Eco Name
SE S/N			← Click
Number Of SE Assist Regeneration	0	••••	Engine
Number Of SE Reset Regeneration	0		Engine
Number Of SF Reset Regeneration Abort	0		Engine
Reason For SF Reset Regeneration Abort	0		Engine
Number Of SF Stationary Regeneration	0		Engine
Number Of SF Stationary Regeneration Abort	0		Engine
Reason For SF Stationary Regeneration Abort	0		Engine
Number Of SF Recovery Regeneration	0		Engine
Number Of SF Recovery Regeneration Abort	0		Engine
Reason For SF Recovery Regeneration Abort	0		Engine
Total Time For SF Regeneration	0.0		Engine
SF Used Time	0.0		Engine
	0		Engine
DPF PM Accumulation Density_C	0.0	þ	Engine
DPF Ash Accumulation	0.0	Р	Engine
DPF Ash Accumulation_T	0.0	Р	Engine
Prev Write Can	cel	I.	
† Click	Z		-
State Cardo Taront		/	
	-		
SF Model			
SF Serial No.			

For "DOC Exchange", present DOC information (before exchange) is displayed and the data is read by PC.

DOC P/N		Loo Hame
	129F01-16200	Engine
DOC S/N	167BA102P0	Engine
Number Of DOC Assist Regeneration	0	Engine
Number Of DOC Reset Regeneration	0	Engine
Number Of DOC Reset Regeneration Abort	0	Engine
Reason For DOC Reset Regeneration Abort	0	Engine
Number Of DOC Stationary Regeneration	0	Engine
Number Of DOC Stationary Regeneration Abort	0	Engine
Reason For DOC Stationary Regeneration Abort	0	Engine
Number Of DOC Recovery Regeneration	0	Engine
Number Of DOC Recovery Regeneration Abort	0	Engine
Reason For DOC Recovery Regeneration Abort	0	Engine
otal Time For DOC Regeneration	0.00	Engine
	0	Engine
SF P/N	129F01-16400	Engine
SF S/N	167CA081M0	Engine
Number Of SF Assist Regeneration	0	Engine
Number Of SF Reset Regeneration	0	Engine
Number Of SF Reset Regeneration Abort	0	Engine

SMARTASSIST-Direct Read Successful OK Click Click the value cell and enter the part number and serial number of the DOC.

DOC P/N Engine Click Engine Number Of DOC Assist Regeneration 0 Engine Number Of DOC Reset Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Countor To Inhibit NOx Efficiency Evaluations 0 SCR Status For NOx Efficiency Evaluations 0 SCR Countor To Allow NOx Efficiency Evaluations 0 SCR Deviation For Upper Limit Plausibility for SCR Inlet NOx 0.0 304 SCR <	DOC P/N Engine Click DOC S/N Engine Number Of DOC Assist Regeneration 0 Engine Number Of DOC Reset Regeneration Abort 0 Engine Number Of DOC Reset Regeneration Abort 0 Engine Number Of DOC Reset Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Reason For DOC Recovery Regeneration Abort 0 Engine Countor To Inhibit NOx Efficiency Evaluations 0 SCR Status For NOx Efficiency Evaluations 0 SCR Countor To Allow NOx Efficiency Evaluations 0 SCR Deviation For Upper Limit Plausibility for SCR Inlet NOx -0.0 SCR OU Engine SC	DOC P/N Engine Click DOC S/N Engine Number Of DOC Assist Regeneration 0 Engine Number Of DOC Reset Regeneration Abort 0 Engine Number Of DOC Reset Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Reason For DOC Recovery Regeneration Abort 0 Engine Countor To Inhibit NOx Efficiency Evaluations 0 SCR Status For NOx Efficiency Evaluations 0 SCR SCR Deviation For Upper Limit Plausibility for SCR Inlet NOx -0.0 SCR SCR Up Model Serial Input Image Image Image Image	Classification	Value	ECU Name
DOC S/N Engine Number Of DOC Assist Regeneration 0 Engine Number Of DOC Reset Regeneration Abort 0 Engine Number Of DOC Reset Regeneration Abort 0 Engine Reason For DOC Reset Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Reason For DOC Recovery Regeneration Abort 0 Engine Reason For DOC Recovery Regeneration Abort 0 Engine Countor To Inhibit NOx Efficiency Evaluations 0 SCR Status For NOx Efficiency Evaluations 0 SCR Deviation For Upper Limit Plausibility for SCR Inlet NOx -0.0 SCR Overal Click Overal SCR SCR SCR <th>DOC S/N Number Of DOC Assist Regeneration Number Of DOC Reset Regeneration Abort Number Of DOC Reset Regeneration Abort Number Of DOC Reset Regeneration Abort Number Of DOC Stationary Regeneration Abort Reason For DOC Stationary Regeneration Abort Reason For DOC Stationary Regeneration Abort Number Of DOC Stationary Regeneration Abort Reason For DOC Recovery Regeneration Recovery Recovery Regeneration Recovery Recovery Recovery Recovery Recover</th> <th>DOC S/N Number Of DOC Assist Regeneration Number Of DOC Reset Regeneration Number Of DOC Reset Regeneration Abort Number Of DOC Reset Regeneration Abort Number Of DOC Stationary Regeneration Abort Number Of DOC Recovery Regeneration A</th> <th>DOC P/N</th> <th>1</th> <th>Engine</th>	DOC S/N Number Of DOC Assist Regeneration Number Of DOC Reset Regeneration Abort Number Of DOC Reset Regeneration Abort Number Of DOC Reset Regeneration Abort Number Of DOC Stationary Regeneration Abort Reason For DOC Stationary Regeneration Abort Reason For DOC Stationary Regeneration Abort Number Of DOC Stationary Regeneration Abort Reason For DOC Recovery Regeneration Recovery Recovery Regeneration Recovery Recovery Recovery Recovery Recover	DOC S/N Number Of DOC Assist Regeneration Number Of DOC Reset Regeneration Number Of DOC Reset Regeneration Abort Number Of DOC Reset Regeneration Abort Number Of DOC Stationary Regeneration Abort Number Of DOC Recovery Regeneration A	DOC P/N	1	Engine
Number Of DOC Assist Regeneration 0 Engine Number Of DOC Reset Regeneration Abort 0 Engine Number Of DOC Reset Regeneration Abort 0 Engine Reason For DOC Reset Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Reason For DOC Recovery Regeneration Abort 0 Engine Reason For DOC Recovery Regeneration Abort 0 Engine Reason For DOC Recovery Regeneration Abort 0 Engine Status For NOx Efficiency Evaluations 0 SCR Status For NOx Efficiency Evaluations 0 SCR Stored Control Factor of NOx Controller 1.0 SCR Countor To Allow NOx Efficiency Evaluations 0 SCR	Number Of DOC Assist Regeneration 0 Engine Number Of DOC Reset Regeneration Abort 0 Engine Reason For DOC Reset Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Reason For DOC Stationary Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Reason For DOC Recovery Regeneration S 0 SCR Status For NOx Efficiency Evaluations 0 SCR Stored Control Factor of NOx Controller 1.0 Countor To Allow NOx Efficiency Evaluations 0 Deviation For Upper Limit Plausibility for SCR Inlet NOx0.0 Prev Write Cancel Mudel Seriel Input Mudel Seriel Input Muteur DOC Medel	Number Of DOC Assist Regeneration 0 Engine Number Of DOC Reset Regeneration Abort 0 Engine Number Of DOC Reset Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Reason For DOC Recovery Regeneration Abort 0 Engine Reason For DOC Recovery Regeneration Abort 0 Engine Total Time For DOC Regeneration 0.00 Engine Status For NOx Efficiency Evaluations 0 SCR Stored Control Factor of NOx Controller 1.0 SCR Countor To Allow NOx Efficiency Evaluations 0 SCR Deviation For Upper Limit Plausibility for SCR Inlet NOx 0.0 SCR Model Serel Input Imagent Imagent <th>DOC S/N</th> <th></th> <th>Engine</th>	DOC S/N		Engine
Number Of DOC Reset Regeneration 0 Engine Number Of DOC Reset Regeneration Abort 0 Engine Reason For DOC Reset Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Total Time For DOC Regeneration 0.00 Engine Countor To Inhibit NOx Efficiency Evaluations 0 SCR Status For NOx Efficiency Evaluations 0 SCR Deviation For Upper Limit Plausibility for SCR Inlet NOx -0.0 304 SCR Image: Prev Write Cancel Image: Cancel	Number Of DOC Reset Regeneration 0 Engine Number Of DOC Reset Regeneration Abort 0 Engine Reason For DOC Reset Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Reason For DOC Stationary Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Reason For DOC Recovery Regeneration Abort 0 Engine Reason For DOC Recovery Regeneration Abort 0 Engine Total Time For DOC Regeneration 0.00 Engine Countor To Inhibit NOx Efficiency Evaluations 0 SCR Status For NOx Efficiency Evaluations 0 SCR Countor To Allow NOx Efficiency Evaluations 0 SCR Deviation For Upper Limit Plausibility for SCR Inlet NOX -0.0 SCR Write Cancel Cancel	Number Of DOC Reset Regeneration 0 Engine Number Of DOC Reset Regeneration Abort 0 Engine Reason For DOC Reset Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Reason For DOC Recovery Regeneration Abort 0 Engine Total Time For DOC Regeneration 0.00 Engine Countor To Inhibit NOx Efficiency Evaluations 0 SCR Status For NOx Efficiency Evaluations 0 SCR Doc Mole Image SCR SCR Image Image Image SCR Status For NOx Efficiency Evaluations 0 SCR SCR Doc Model Senal Input Image Image Image	Number Of DOC Assist Regeneration	0	Engine
Number Of DOC Reset Regeneration Abort 0 Engine Reason For DOC Reset Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Reason For DOC Stationary Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Number For DOC Recovery Regeneration Abort 0 Engine Total Time For DOC Regeneration 0.00 Engine Countor To Inhibit NOx Efficiency Evaluations 0 SCR Status For NOx Efficiency Evaluations 0 SCR Stored Control Factor of NOx Controller 1.00 SCR Countor To Allow NOx Efficiency Evaluations 0 SCR Deviation For Upper Limit Plausibility for SCR Inlet NOx -0.0 304 SCR	Number Of DOC Reset Regeneration Abort 0 Engine Reason For DOC Reset Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Reason For DOC Stationary Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Reason For DOC Recovery Regeneration Abort 0 Engine Reason For DOC Recovery Regeneration Abort 0 Engine Total Time For DOC Regeneration 0.00 Engine Countor To Inhibit NOx Efficiency Evaluations 0 SCR Status For NOx Efficiency Evaluations 0 SCR Deviation For Upper Limit Plausibility for SCR Inlet NOx -0.0 B04 SCR Image: Prev Write Cancel Image: Cancel Image: Cancel Image: Click Image: Click Image: Cancel Image: Cancel	Number Of DOC Reset Regeneration Abort 0 Engine Reason For DOC Reset Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Reason For DOC Stationary Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Reason For DOC Recovery Regeneration Abort 0 Engine Reason For DOC Recovery Regeneration Abort 0 Engine Total Time For DOC Regeneration 0.00 Engine Countor To Inhibit NOx Efficiency Evaluations 0 SCR Status For NOx Efficiency Evaluations 0 SCR Deviation For Upper Limit Plausibility for SCR Inlet NOx -0.0 SCR Outor To Allow NOx Efficiency Evaluations 0 SCR Outor To Allow NOx Efficiency Evaluations 0 SCR Outor For Upper Limit Plausibility for SCR Inlet NOx -0.0 SCR OUC Model Imput	Number Of DOC Reset Regeneration	0	Engine
Reason For DOC Reset Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Reason For DOC Stationary Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Number For DOC Recovery Regeneration Abort 0 Engine Total Time For DOC Regeneration 0.00 Engine Countor To Inhibit NOx Efficiency Evaluations 0 SCR Status For NOx Efficiency Evaluations 0 SCR Stored Control Factor of NOx Controller 1.0 SCR Countor To Allow NOx Efficiency Evaluations 0 SCR Deviation For Upper Limit Plausibility for SCR Inlet NOx -0.0 304 SCR	Reason For DOC Reset Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Reason For DOC Stationary Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Reason For DOC Recovery Regeneration Abort 0 Engine Reason For DOC Recovery Regeneration Abort 0 Engine Reason For DOC Recovery Regeneration Abort 0 Engine Total Time For DOC Regeneration 0.00 Engine Countor To Inhibit NOx Efficiency Evaluations 0 SCR Status For NOx Efficiency Evaluations 0 SCR Countor To Allow NOx Efficiency Evaluations 0 SCR Deviation For Upper Limit Plausibility for SCR Inlet NOx -0.0 SCR Outer Seriel Input Click SCR SCR	Reason For DOC Reset Regeneration Abort 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Reason For DOC Stationary Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Reason For DOC Recovery Regeneration Abort 0 Engine Reason For DOC Recovery Regeneration Abort 0 Engine Total Time For DOC Regeneration 0.00 0 Engine Countor To Inhibit NOx Efficiency Evaluations 0 SCR SCR Status For NOx Efficiency Evaluations 0 SCR SCR Countor To Allow NOx Efficiency Evaluations 0 SCR SCR Deviation For Upper Limit Plausibility for SCR Inlet NOx -0.0 SCR SCR Write Cancel Image: Cancel Image: Cancel Image: Cancel Image: Cancel Image: Model Serial Input Image: Cancel Image: Cancel Image: Cancel <	Number Of DOC Reset Regeneration Abort	0	Engine
Number Of DOC Stationary Regeneration 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Reason For DOC Stationary Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Reason For DOC Recovery Regeneration Abort 0 Engine Total Time For DOC Regeneration 0.00 Engine Countor To Inhibit NOX Efficiency Evaluations 0 SCR Status For NOx Efficiency Evaluations 0 SCR Stored Control Factor of NOx Controller 1.0 SCR Countor To Allow NOx Efficiency Evaluations 0 SCR Deviation For Upper Limit Plausibility for SCR Inlet NOx -0.0 SCR Image: Click Image: Click Image: Click Image: Click	Number Of DOC Stationary Regeneration 0 Engine Number Of DOC Stationary Regeneration Abort 0 Reason For DOC Stationary Regeneration Abort 0 Number Of DOC Recovery Regeneration Abort 0 Reason For NOx Efficiency Evaluations 0 ScR Status For NOx Efficiency Evaluations 0 Deviation For Upper Limit Plausibility for SCR Inlet NOx0.0 Reveal Reason For Upper Limit Plausibility for SCR Inlet NOx0.0 Reveal Reveal	Number Of DOC Stationary Regeneration 0 Engine Number Of DOC Stationary Regeneration Abort 0 Engine Number Of DOC Recovery Regeneration Abort 0 Engine Reason For DOC Recovery Regeneration Abort 0 Engine Total Time For DOC Regeneration 0.00 0 Engine Countor To Inhibit NOx Efficiency Evaluations 0 SCR SCR Status For NOx Efficiency Evaluations 0 SCR SCR Stored Control Factor of NOx Controller 1.0 SCR SCR Ocuntor To Allow NOx Efficiency Evaluations 0 SCR SCR Deviation For Upper Limit Plausibility for SCR Inlet NOx -0.0 SCR S04 SCR Image: Imput Image: Imput Image: Image: Imput Image: Image	Reason For DOC Reset Regeneration Abort	0	Engine
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Countor To Allow NOx Efficiency Evaluations 0 Deviation For Upper Limit Plausibility for SCR Inlet NOx0.0 Prev Write Cancel	Countor To Allow NOx Efficiency Evaluations 0 Deviation For Upper Limit Plausibility for SCR Inlet NOx0.0 Prev Write Cancel	Countor To Allow NOx Efficiency Evaluations 0 Deviation For Upper Limit Plausibility for SCR Inlet NOx0.0 Prev Write Cancel Click	Stored Control Factor of NOx Controller	1.00	SCR
Deviation For Upper Limit Plausibility for SCR Inlet NOx0.0 Prev Write Cancel Click	Deviation For Upper Limit Plausibility for SCR Inlet NOx0.0 Prev Write Cancel Click Model Serial Input	Deviation For Upper Limit Plausibility for SCR Inlet NOx0.0 Prev Write Cancel Click Model Serial Input DOC Model	Countor To Allow NOx Efficiency Evaluations	0	SCR
Prev Write Cancel	Prev Write Cance	Prev Write Cancel	Deviation For Upper Limit Plausibility for SCR Inlet NOx	-0.0	04 SCR
	Model Serial Input	Model Serial Input	Prev Write Cancel		

Enter the data in SF exchange or DOC exchange then click "Write" to write the data to the ECU.

The Password Request Screen is displayed. Enter the password, and click "Set".

Password authentication	× 1
Enter your password. User ID Password Click → Set Cancel	• ← Ente

When the writing of correction values is complete, the below screen is displayed.



After ECU writing is completed, the procedure required next is displayed.

When the confirmation screen is displayed, click "OK". Turn ON/OFF the ECU by following the on-screen instructions. Turn the ECU power source ON after holding the power OFF for 30 seconds.



Confirm the content and click "Yes" to automatically send the replacement completion data to the management server. Click "No" to send it manually at a later time.



When the screen below is displayed, click "OK".

Exchange process is complete.

SMARTASSIST-Direct		SMARTASSIST-Direct
The report is made now.		The report was preserved.
Click → OK	$\overline{}$	Click → OK

When you select "automatic sending", then follow the same instruction as [13.3.2 Automatic Upload Operation when Injector (Bosch) Replacement (Execution) completed].

If you select the data manually, then refer to chapter 14 for the following procedure.

Exchange SCR

The procedure, "Start Menu (Industrial Engine → Small Land Engine)" →"Main Menu ("ECU Access"→"FIE Replacement (Execution)", is the same as [13.2.1 Injector Exchange Process for 4TNV94HT-Z/4TNV94CHT/4TNV94FHT]. Click "SCR Exchange".



Present SCR information (before exchange) is displayed and the data is read by PC.

Classification	Value
Stored NH3 Loading Quantity	0.000
Countor To Inhibit NOx Efficiency Evaluations	0
Status For NOx Efficiency Evaluations	0
Stored Control Factor of NOx Controller	1.000
Deviation For Upper Limit Plausibility for SCR Inlet NOx Sensor	-0.002304
Deviation For Lower Limit Plausibility for SCR Inlet NOx Sensor	-0.002304
Countor To Allow NOx Efficiency Evaluations	0
SCR Used Time	0.00



Click the cell of SCR that you want to exchange from Classification. Enter the data, and then click [Write].

Classification	Value
Stored NH3 Loading Quantity	0.000
Countor To Inhibit NOx Efficiency Evaluations	0
Status For NOx Efficiency Evaluations	0
Stored Control Factor of NOx Controller	1.000
Deviation For Upper Limit Plausibility for SCR Inlet NOx Sensor	-0.002304
Deviation For Lower Limit Plausibility for SCR Inlet NOx Sensor	-0.002304
Countor To Allow NOx Efficiency Evaluations	0
SCR Used Time	0.00

The Password Request Screen is displayed. Enter the password, and click "Set".

Password authentication		
Enter your password.		
Password Click → Set Cancel	€ ← EI	ntei

When the writing of correction values is complete, the below screen is displayed.



After ECU writing is completed, the procedure required next is displayed.

When the confirmation screen is displayed, click "OK". Turn ON/OFF the ECU by following the on-screen instructions. Turn the ECU power source ON after holding the power OFF for 30 seconds.



Confirm the content and click "Yes" to automatically send the replacement completion data to the management server. Click "No" to send it manually at a later time.



When the screen below is displayed, click "OK".

Exchange process is complete.



When you select "automatic sending", then follow the same instruction as [13.3.2 Automatic Upload Operation when Injector (Bosch) Replacement (Execution) completed].

If you select the data manually, then refer to chapter 14 for the following procedure.

SCR NOx Sensor Exchange

The procedure, "Start Menu (Industrial Engine → Small Land Engine)" →"Main Menu ("ECU Access"→"FIE Replacement (Execution)", is the same as [13.2.1 Injector Exchange Process for 4TNV94HT-Z/4TNV94CHT/4TNV94FHT]. Click SCR Upstream NOx Sensor Exchange or SCR Downstream NOx Sensor Exchange.





Present NOx Sensor information (before exchange) is displayed and the data is read by PC.



Click the cell of NOx sensor that you want to exchange from Classification. Enter the data, and then click [Write].

Classification	Value
Countor To Inhibit NOx Efficiency Evaluations	0
Status For NOx Efficiency Evaluations	0
Stored Control Factor of NOx Controller	1.000
Countor To Allow NOx Efficiency Evaluations	0
Deviation For Upper Limit Plausibility for SCR Inlet NOx Sense	or -0.002304
Deviation For Lower Limit Plausibility for SCR Inlet NOx Sense	or -0.002304
SCR NOx senser1 Used Time	0.00



r the password, and click "Set".

Password authentication	
Enter your password.	_
User ID	
Password	🖡 🔶 Enter
Click → Set Cancel	

When the writing of correction values is complete, the below screen is displayed.



After ECU writing is completed, the procedure required next is displayed.

When the confirmation screen is displayed, click "OK". Turn ON/OFF the ECU by following the on-screen instructions. Turn the ECU power source ON after holding the power OFF for 30 seconds.



Confirm the content and click "Yes" to automatically send the replacement completion data to the management server. Click "No" to send it manually at a later time.



When the screen below is displayed, click "OK".

Exchange process is complete.



When you select "automatic sending", then follow the same instruction as [13.3.2 Automatic Upload Operation when Injector (Bosch) Replacement (Execution) completed].

If you select the data manually, then refer to chapter 14 for the following procedure.

■Other Engine Parts Exchange Process

The procedure, "Start Menu (Industrial Engine → Small Land Engine)" →"Main Menu ("ECU Access"→"FIE Replacement (Execution)", is the same as [13.2.1 Injector Exchange Process for 4TNV94HT-Z/4TNV94CHT/4TNV94FHT]. Click "Other Engine Parts Exchange".



Present information of other engine parts (before exchange) is displayed and the data is read by PC.



Click the cell of other engine parts that you want to exchange from Classification, enter the data, and then click [Write].





r the password, and click "Set".

1 Password authentication	
Enter your password.	
Password •••••	– Enter
Click → Set Cancel	

When the writing of correction values is complete, the below screen is displayed.



After ECU writing is completed, the procedure required next is displayed.

When the confirmation screen is displayed, click "OK". Turn ON/OFF the ECU by following the on-screen instructions. Turn the ECU power source ON after holding the power OFF for 30 seconds.



Confirm the content and click "Yes" to automatically send the replacement completion data to the management server. Click "No" to send it manually at a later time.



When the screen below is displayed, click "OK".

Exchange process is complete.



When you select "automatic sending", then follow the same instruction as [13.3.2 Automatic Upload Operation when Injector (Bosch) Replacement (Execution) completed].

If you select the data manually, then refer to chapter 14 for the following procedure.

13.3 Parts Exchange Process for CR OEM Engine Manufactured by Bosch

13.3.1 Injector Exchange for 3/4 TNV**C (T/HT) Engines

- When exchanging the common rail (CR) injector nozzle manufactured by Bosch and equipped in 3/4TNV**C(H) (Tier 4 compliant) engines, it is necessary to write the correction values of the injector nozzle to the engine ECU.
- Correction values of the injector nozzles are registered separately by the engine ECU. It is necessary to set the correcton value when replacing the ECU or the injector nozzle.



1 Select "Industrial Engine" from the Start Menu.



2 Select "Small Land Engine".

SMARTASSIST-Direct		
SMARTASSIST Direct	i Language :	Terminal Information / Job Edit English
AGRICULTURE		Exit STIC TOOL

Note Make sure that the Internet connection is active.

3 The main menu screen is displayed. Click "Component Replacement (Execution)" on the "ECU Access" tab.



4 Click "Injector Nozzle Exchange (Trim data Write)".



5 Information on the alphanumeric code of the injector is displayed.

INJECTOR Exchange		
Input the com	pensation data.	
Cylinder No.	Alphanum Code	
1	AA8WCECC	
2	ASSCBSZC	and the second
3	A1IEEW5C	
4	78RF6NXC	
Position of fl	ywheel Right side	Pattern No.1 No.2 No.3 No.4 cylinder cylinder cylinder Wheel DataInput Complete

6 Set the position of the flywheel, and confirm the position of the cylinders.

INJECTOR Exchange		
Input the comp	pensation data.	
Cylinder No.	Alphanum Code	
1	AA8WCECC	
2	ASSCBSZC	
3	A1IEEW5C	
4	78RF6NXC	
Position of fly ● Left side ⊘	ywheel Right side flyV	attern No.1 No.2 No.3 No.4 cylinder cylinder cylinder Vheel DataInput Complete

INJECTOR Exchange	1 100	Ref. 1.	1000		
Input the comp	pensation data.				
Cylinder No.	Alphanum Code				
1	AA8WCECC				
2	ASSCBSZC				
3	A1IEEW5C				
4	78RF6NXC				
Position of fl ⊙ Left side	wheel Right side	attern No.4 cylinder	No.3 cylinder	No.2 cylinder	No.1 cylinder flyWhee ataInput Complete

13. Part Exchange

7 Select the cylinder number of the injector to be exchanged, and then click "Data Input".



8 Enter the 8-digit alphanum code indicated on the top of the injector.

Click "Write" to start writing the data.



🐐 INJECTOR DataInput	×
Cylinder No. 1	
Injector compensation value Enter ↓	
. A Z S H 7 5 E	A
Click	

9 The password request page is displayed. Enter the password, and click "Set".

Password authentication	
Enter your password.	-
Password) ← En
Click → Set Cancel	

10 When writing is complete, the below message appears.



11 The rewritten alphanum code is displayed.

Click "Complete" to finish the exchange process.

nput the compe	ensation data.	
Cylinder No.	Alphanum C	ode
1	AZSH75EA	
2	ASSWKEFA	
3	B1ALDEDA	
4	A115LWKA	
Position of flyw ● Left side ○ I	wheel Right side	r Pattern No.1 No.2 No.3 No.4 cylinder cylinder
		flyWheel
		DataInput

12 A screen with the necessary procedures after the ECU writing process is displayed.

When the confirmation screen is displayed, click "OK". Turn ON/OFF the ECU by following the on-screen instructions.

Turn the ECU power source ON after holding the power OFF for 30 seconds.



13 Confirm the content and click "Yes" to automatically send the replacement completion data to the management server. Click "No" to send it manually at a later time. When you click "No", refer to chapter 14.



14 A message box noting you that a report was created will appear.

Click "OK".



Click "OK" on the message box for the report creation notification to return to the below page. Click "Cancel" to return to the main menu.

Proceeding Component Replacement (Execution)		
Please choose a part to change.		
Injector Nozzle Exchange	Engine	
DPF Exchange	Engine	
SF Exchange Engi		
DOC Exchange	Engine	
Rail Exchange	Engine	
Cancel		🔶 Click
Trim data is written in ECU.		

13.3.2 Automatic Upload Operation when Injector (Bosch) Replacement (Execution) completed

1 Select "Industrial Engine" from the Start Menu.





2 Select "Small Land Engine".

SMARTASSIST-Direct		
SMARTASSIST Direct	() Language :	Terminal Information / Job Edit English
AGRICULTURE Engine INDUSTRIAL ENGINE		Exit STIC TOOL



Make sure that the Internet connection is active.

3 "Exchange Info Upload" screen is displayed, and the upload starts.



4 A message box notifies you when the upload is complete.



13.3.3 Exchange DPF/SF/DOC

■DPF Exchange Process

The procedure, "Start Menu (Industrial Engine → Small Land Engine)" →"Main Menu ("ECU Access"→"FIE Replacement (Execution)", is the same as [13.2.1 Injector Exchange Process for 4TNV94HT-Z/4TNV94CHT/4TNV94FHT]. Click "DPF Exchange".



Present DPF information (before exchange) is displayed and the data is read by PC.

Please check data.			
Classification	Value		
SF P/N	129C01-16400		
SF S/N	1281800500		
DOC P/N	129E00-1620002		
DOC S/N	12A1A005Q0		
Number Of SF Assist Regeneration	0		
Number Of SF Reset Regeneration	0		
Number Of SF Reset Regeneration Abort	0		
Reason For SF Reset Regeneration Abort	0		
Number Of SF Stationary Regeneration	0		
Number Of SF Stationary Regeneration Abort	0		
Reason For SF Stationary Regeneration Abort	0		
Number Of SF Recovery Regeneration	Recovery Regeneration 0		
Number Of SF Recovery Regeneration Abort	0		
Reason For SF Recovery Regeneration Abort	0		
Total Time For SF Regeneration	0.00		
SF Used Time	0.00		
DPF PM Accumulation Density_C	0.0034		
DPF Ash Accumulation	0.0000		



Select "New" or "Reuse" for SF status.

Click the value cell and enter the part number and serial number of the SF.

DPF Excha	ange			
Please	input data.			
	•			
SFInfor	mation	New	Clearin	g
	_	Classification	Valu	ie 🌱
SF P/N	1			
SF S/N	1			
DOC F	P/N			
DOC S	S/N			
Numbe	r Of SF Ass	ist Regeneration	0	
Numbe	r Of SF Res	set Regeneration	0	
Numbe	er Of SF Res	set Regeneration Abort	0	
Reaso	n For SF Re	eset Regeneration Abort	0	
Number Of SF Stationary Regeneration			0	
Number Of SF Stationary Regeneration Abort			0	
Reaso	n For SF St	ationary Regeneration Abort	0	
Number Of SF Recovery Regeneration			0	
Number Of SF Recovery Regeneration Abort			0	
Reason For SF Recovery Regeneration Abort			0	
Total Time For SF Regeneration			0.	
SF Used Time			0.	
DPF PM Accumulation Density_C			0.	- 00
		Prev Write Cancel]	
			イ	4
			\sim	
	🎲 Model Serial In	put		
	SF Model			
	SF Serial	No.		
		Set Cancel		
	N			
Click the value cell and enter the part number and serial number of the DOC.

Click "Write" to write the data to the ECU.



The password request page is displayed. Enter the password, and click "Set".

Password authentication	
Enter your password.	
Password	
Click → Set Cancel	

When writing is complete, the below message appears.



When the confirmation screen is displayed, click "OK". Turn ON/OFFthe ECU by following the on-screen instructions. Turn the ECU power source ON after holding the power OFF for 30 seconds.



Confirm the content and click "Yes" to automatically send the replacement completion data to the management server. Click "No" to send it manually at a later time.



When the screen below is displayed, click "OK".

Exchange process is complete.

SMARTASSIST-Direct		SMARTASSIST-Direct
The report is made now.		The report was preserved.
Click → OK	$\overline{}$	Click → OK

When you select "automatic sending", then follow the same instruction as [13.3.2 Automatic Upload Operation when Injector (Bosch) Replacement (Execution) completed].

If you select the data manually, then refer to chapter 14 for the following procedure.

SF/DOC Exchange

The procedure, "Start Menu (Industrial Engine → Small Land Engine)" →"Main Menu ("ECU Access"→"FIE Replacement (Execution)", is the same as [13.2.1 Injector Exchange Process for 4TNV94HT-Z/4TNV94CHT/4TNV94FHT]. Click "SF Exchange" or "DOC Exchange".





For "SF Exchange", present SF information (before exchange) is displayed and the data is read by PC.

Classification	Value
SF P/N	129C01-16400
SF S/N	12A1A005Q0
Number Of SF Assist Regeneration	0
Number Of SF Reset Regeneration	0
Number Of SF Reset Regeneration Abort	0
Reason For SF Reset Regeneration Abort	0
Number Of SF Stationary Regeneration	0
Number Of SF Stationary Regeneration Abort	0
Reason For SF Stationary Regeneration Abort	0
Number Of SF Recovery Regeneration	0
Number Of SF Recovery Regeneration Abort	0
Reason For SF Recovery Regeneration Abort	0
Total Time For SF Regeneration	0.00
SF Used Time	0.00
DPF PM Accumulation Density_C	0.0034
DPF Ash Accumulation	0.0000



Select "New" or "Reuse" for SF status.

Click the value cell and enter the part number and serial number of the SF.

Click "Write" to write the inputted data to the ECU.



For "DOC Exchange", present DOC information (before exchange) is displayed and the data is read by PC.

lease check data.	
Classification	Value
DOC P/N	129E00-1620002
DOC S/N	12A1A005Q0
Number Of DOC Assist Regeneration	0
Number Of DOC Reset Regeneration	0
Number Of DOC Reset Regeneration Abort	0
Reason For DOC Reset Regeneration Abort	0
Number Of DOC Stationary Regeneration	0
Number Of DOC Stationary Regeneration Abort	0
Reason For DOC Stationary Regeneration Abort	0
Number Of DOC Recovery Regeneration	0
Number Of DOC Recovery Regeneration Abort	0
Reason For DOC Recovery Regeneration Abort	0
Total Time For DOC Regeneration	0.00
SF P/N	129C01-16400
SF S/N	12A1A005Q0
Number Of SF Assist Regeneration	0



Click the value cell and enter the part number and serial number of the DOC.



Enter the data in SF exchange or DOC exchange then click "Write" to write the data to the ECU.

The password request page is displayed. Enter the password, and click "Set".

1 Password authentication	×	
Enter your password.		
		Into
Click → Set Cancel		Inte

When writing is complete, the below message appears.



When the confirmation screen is displayed, click "OK". Turn ON/OFFthe ECU by following the on-screen instructions. Turn the ECU power source ON after holding the power OFF for 30 seconds.



Confirm the content and click "Yes" to automatically send the replacement completion data to the management server. Click "No" to send it manually at a later time.



When the screen below is displayed, click "OK".

Exchange process is complete.

SMARTASSIST-Direct		SMARTASSIST-Direct
The report is made now.		The report was preserved.
Click → OK	$\overline{}$	Click → OK

When you select "automatic sending", then follow the same instruction as [13.3.2 Automatic Upload Operation when Injector (Bosch) Replacement (Execution) completed].

If you select the data manually, then refer to chapter 14 for the following procedure.

13.3.4 Rail Exchange Process

The procedure, "Start Menu (Industrial Engine → Small Land Engine)" →"Main Menu ("ECU Access"→"FIE Replacement (Execution)", is the same as [13.2.1 Injector Exchange Process for 4TNV94HT-Z/4TNV94CHT/4TNV94FHT]. Click "Rail Exchange".



Present rail information (before exchang) is displayed and the data is read by PC.



Click "Write".

(No data entry is required.)



The password request page is displayed. Enter the password, and click "Set".

19 Password authentication	
Enter your password.	
User ID	
Password ••••••	Ente
Click	

When writing is complete, the below message appears.



When the confirmation screen is displayed, click "OK". Turn ON/OFFthe ECU by following the on-screen instructions.

Turn the ECU power source ON after holding the power OFF for 30 seconds.



When the screen below is displayed, click "OK".

Exchange process is complete.

SMARTASSIST-Direct	SMARTASSIST-Direct
The report is made now.	The report was preserved.
Click→OK	Click → OK

13.4 Reference material "Parts replacement process"

■Supply Pump Replacement Process for 4TNV94HT-Z and 4TNV94CHT (Denso) Engines

When replacing the supply pump for the 4TNV94HT-Z and 4TNV94CHT engines (DENSO CR), it is necessary to perform pump learning after replacement. Because there is no supply pump replacement item found in the main menu for part replacements, after replacing the pump, connect to the SA-D and select Fuel Pump Learning using the forced operation diagnosis test from the top bar of the menu, and conduct according to the notes.

For details, refer to "[6.5.9 Referance material: Active Control (Engine TNV series for Tier3/Tier4)] [■ Fuel Pump Learning]".

■4TNV94HT-Z Engine (DENSO) ECU for CR - Replacement Process

Also, when replacing the management ECU or ECU for CR for the 4TNV94HT-Z engine type or when replacing the management ECU or ECU for CR at the same time, it is necessary to initialize the ECU for CR in order to transfer and receive the data from the management ECU to the ECU for CR. Connect to the SA-D and select the configuration settings from the settings on the menu top bar, and then check the initialized data of the ECU data for CR.

SMARTASSIST-Direct			
File(F) View(V) Operation(O) Too	I(T) Help(H)		
🔊 🔝 Diagnostics 🖪 🖶 🗖 TRAIN	NING Active Code		
MenuToolBar # >	<		
ECU Information	System Settings - Configuration		
Diagnostia Codos	Description	Value	Notes
Diagnostic Codes	HOLD SPEED2	1500	
Freeze Frame Data	SLOW DOWN SPEED	1500	
Diagnostic Tests	SLOW DOWN RATE1	85	
	SLOW DOWN RATE2	70	
Data Logging	AUTO DECELERATION WAI	4	
Historical Data	DROOP CONTROL SELECT	1	0:ISOCHRONOUS, 1:CHANGE POSSIBILITY, 2:DROOP
ECI Structures	ENGINE STOP DELAY TIME	30	
Eco on detures	ECU Data Format for CR	0	
System Settings	Fail-safe Action Delay Time A	30	
Configuration	Fail-safe Action Delay Time B	180	*
Calibration		m	•
Tuning	Comment		ē x
Initial Settings	Notes :		
			+
Baudrate : 500k Type:4TNV94HT-ZX	 XX / SNo:123456		ONLINE

The password request page is displayed. Enter the password, and click "Set".

1 Pessword authentication	×
Enter your password.	
User ID	
Password ••••••	🔶 Enter
Click → Set Cancel	

When replacing the ECU for CR, because the data is zero"0", select Initialize ECU data for CR and input the number one "1" in the settings on the screen.

🎲 Data Set[Training	1]		
Deta Name	ECU Data Format for	CR	
Current	0		
Max	255	1 00 🔺 🔻	Resolution
Set To	0	10 🔺 🔻	1
Min	0		Min changed value 1
		Q	A. A. A. C. A. A. A.
Note			
			_
	Set	Cancel	J

Immobilizer (Option) Failure or Replacement Process

When the engine cannot be started due to a failure of the immobilizer (optional function) and or when replacing the immobilizer, connect to the SA-D, and select the configuration settings from the menu top bar settings, and then check the immobilizer UNIT-ID clear data.

SMARTASSIST-Direct					
$File(\underline{F})$ $View(\underline{V})$ $Operation(\underline{O})$ Too	l(<u>T</u>) Help(<u>H</u>)				
🔊 🔝 Diagnostics 🖪 🖶 📼 TRAI	NING Active Code				
MenuToolBar e >	<				
ECU Information	System Settings -	- Configur	ation		
Diagnastia Codes	ription	Value		Notes	^
Diagnostic Codes	UNIT ID CLE	0	0:Clear		
Freeze Frame Data	SPEED	1890			
Diagnostic Tests	S LIMIT SPE	1890			1
Data Logging	SPEED2	1695			
	S LIMIT SPE	1695			
Historical Data	1	1800			
ECU Structures	2	1500			
System Settings	SPEED	1500			
Configuration	RAIE1	85			
Configuration	RAIEZ	70		m	
Calibration	-				
Tuning	Comment				ē >
Initial Settings	Notes :				
	0:Clear				
					+
Baudrate : 500k Type:4TNV94HT-ZX	XX / SNo:123456				ONLINE

If there is a value other than zero "0", select immobilizer UNIT-ID clear from that screen and input zero "0" in the settings.

🍿 Data Set[Training]		
Deta Name	IMMOBILIZER UNIT	D CLEAR	
Current	0		
Max	255	100 🔺 🔻	Resolution
Set To	0	10 🔺 🔻	1
Min	0	1	Min changed value 1
Note	0:Clear	Υ <u>,</u> ,,,,	
	Set	Cancel]

14. Exchange Information Management Function

Manual Upload Operation of Exchange Information 14.1

As explained in Chapter 12 and Chapter 13, when reprogramming the ECU software*1, copying the settings (correction value), replacing the pump (copying the setting), or replacing the injector nozzle, DPF, rail (writing the correction values), a maintenance report is created and this data is upload automatically or manually to the center. However, the data is not sent automatically when reprogramming the software during ECU replacement. Therefore it is necessary to upload the data to the Center manually. Also, if despite having downloaded the software and data, and it was not replaced, it is necessary to perform the process of cancellation of the replacement. These task implementation items and operation categories have been summarized in a table as indicated below. As indicated in the table below, in the case a manual operation process or replacement operation process (or downloaded data) was canceled, it will become necessary to perform a manual upload operation, for which procedures are provided in this chapter.

*1: There are two types of ECU software available for 4TNV94FHT engines, engine ECU and SCR ECU (=DCU: Dosing Control Unit).

If the process is not completed automatically, it is necessary to upload a replace-Note ment completion or a replacement cancellation process manually to the center. If the data is not uploaded, the process will not complete and as such, the ECU software and pump correction values cannot be downloaded.

In addition, if the data is not uploaded within 30 days of completing the process, a warning screen will be displayed, prompting the user to execute the process.

o: Selectable -: Not Set

		Upl	oad	Replacement	Notes
Control Menu		Automatic Comp l etion	Manual Completion	(or downloaded data) cancellation	
ECU Reprogramming (Flash)					
	ECU Exchange (Onboard Reprogramming)	-	0	0	
	ECU Exchange (Off board Reprogramming)	-	0	0	
Software Update (Onboard Reprogramming)		0	0	0	
Settings Copy		0	0	-	
Parts Replacement (Execution)					
	Pump Exchange (Copying Correction Value)	0	0	0	
	Injector Nozzle Exchange (Writing Correction Value)	0	0	-	
	Rail Replacement (Writing Correction Value)	0	0	-	
	DPF Replacement (Writing Correction Value)	0	0	-	
	SF Replacement (Writing Correction Value)	0	0	-	
	DOC Replacement (Writing Correction Value)	-	-	-	

• The writing of injector nozzle, DPF, SF, DOC, rail correction values is not the writing of downloaded data, and thus there is no cancellation operation.

Replacement or downloaded data cancellation example.



14.2 Manual Exchange Completion Process

1 Select "INDUSTRIAL ENGINE" from the Start Menu.



2 Select "Engine".

SMARTASSIST-Direct	
SMARTASSIST Direct	Terminal Information / Job Edit Language : English -
AGRICULTURE	Exit TIG TOOL

3 The Main Menu Screen is displayed.

SMARTASSIST-Direct	
File(<u>F</u>) View(\underline{V}) Tool(<u>T</u>) Help(<u>H</u>)	<u>1</u>)
🔝 Main Menu 🗇 🖶 📼	
MenuToolBar 🛛 🖉 ×	
ECU Access	
Diagnostics (Execution)	 Operations that are performed when communicating with ECU>
Product Operation Data (Acquisition)	The communication connection to the center is included and a necessary function is not included.
ECU Reprogramming (Flash)	
Set Value Copy	
Component Replacement (Execution)	Corrections, data and adjustments used during maintenance or error diagnostics>>
Get option ECU information	View data from the ECU, save ECU data and perform operational tests and adjustment.
Performance inspection (Agri)	
Data Management	
Database Access	
Advanced Settings/Additional Settings	
Job Assistant	Comment 5 ×
AGRICULTURE / Tractor / Expert	ONLINE

4 Click "Exchange Information Management" and "Exchange Complete" on the tab "Data Management".



- **5** The Exchange Information Management (Completion) Screen is displayed.
 - 1 Operation Name selection

Select "ECU Exchange (onboard reprogramming)" "ECU Exchange (offboard reprogramming)" "Software Update (onboard reprogramming)", "Replace Pump (copy correction values)", "Replace Nozzle (copy correction values) etc.

- 2 Checkbox when completing replacement
- 3 Model
- 4 Serial No
- 5 ECU Name
- 6 Write Mode
- 7 Download Data
- 8 Write Data
- 9 Send button

		1			
Exchange information	management (Co	mpletion)			
Operation Name	e ECU Exc	hange (Onboa	rd Reprogrammi	ng) -	
Complete	Model	Serial No	ECU Serial N	o.	ECU Nam
2	3	4			5
The coloridad	unde in trans	witted as "as	unlated" to the		
management s Please set the and click "Send	erver. work name	, select the di	splayed work,	Send	Cancel
				9	

6 The Exchange Information Management (Completion) Screen is displayed.

Click the tab "Operation Name", and select the task that you wish to cancel.

Exchange information management (Completion) Operation Name Software Update (Onboard Reprogramming) - All Item ECU Exchange (Onboard Reprogramming) Umber 1 4TI ECU Exchange (Off board Reprogramming) Software Update (Onboard Reprogramming) Pump Exchange (Trim Data Copy) Nozzle Exchange (Trim Data Copy) DPF/DOC/SF Exchange Get option ECU information	← Click ECU Name ENGINE	Write Mode ECU Soft Update	Download Date 27 October,2015	
The selected work is transmitted as "completed" to the managem Please set the work name, select the displayed work, and click "S	ent server. Send".		Send Ca	ncel

7 Select the task that you wish to complete. When the ECU software to be canceled is displayed, select and click "Send" and click the task that you wish to complete.

k →	mplete <mark>⊯ 4</mark>	Model TNV94HT-ZXSRA	Serial No 00117	ECU Serial No. 9960900888	ECU Name ENGINE	Write Mode ECU Soft Update	Download Date 27 October,2015

8 The Exchange Information Management (Completion) process starts.



9 A message box notifies you when the Exchange Information Management (Completion) process has finished. Click "OK".



10 Click "OK" on the Exchange Information Management (Completion) Process Completion Message Box. The Exchange Information Management (Completion) Screen displays.

Click "Cancel" to return to the main menu.



11 The Main Menu screen starts up, and the Exchange Information Management (Completion) task is finished.

SMARTASSIST-Direct	
$File(\underline{F}) View(\underline{V}) Tool(\underline{T})$	Help(<u>H</u>)
🔝 Main Menu 🗇 🔹 📼	
MenuToolBar # ×	
ECU Access	
Data Management	<pre><operations be="" can="" connected="" ecu="" performed="" that="" the="" without=""></operations></pre>
Diagnostic Data (Display)	The communication connection to the center is included and a necessary function is included.
Product Operation Data (Display)	
ECU Soft Download	
Trim Data Download	
Manual Search	< <viewing data="" ecu="" saved="" the="">></viewing>
Saved Data	18
Exchange Information	View and compare the saved data of ECU in the diagnostics, start screen Data that has been collected at other workstations must be imported from the Data Management menu using "Save
Database Access	Data".
Advanced Softings/Additional Sy	
Job Assistant	
	Comment 5 ×
AGRICULTURE / Tractor /	Expert ONLINE
CANADAR CHARGE SANGER CANADAR AND CANADAR	

14.3 Replacement (or downloaded data) cancellation process

If despite having downloaded the software and data, and it was not replaced, it is necessary to perform the process of cancellation of the replacement. The following indicates this procedure.

1 Select "INDUSTRIAL ENGINE" from the Start Menu.

SMARTASSIST-Direct	
SMARTASSIST Direct	() Terminal Information / Job Edit Language : English →
AGRICULTURE	Exit VANMAR DIAGNOSTIC TOOL

2 Select "Engine".

SMARTASSIST-Direct	
SMARTASSIST Direct	Terminal Information / Job Edit Language : English -
AGRICULTURE	Erit TIG TOOL

3 The Main Menu Screen is displayed.

SMARTASSIST-Direct		
File(<u>F</u>) View(<u>V</u>) Tool(<u>T</u>) Help(<u>H</u>)	
🔊 Main Menu 🖪 🚸 📼		
MenuToolBar # ×		
ECU Access Data Management Database Access Advanced Settings/Additional Settings Job Assistant Service Campaign	<settings action="" and="" functions="" optional="" regarding="" system=""> In usual service, it is not necessary to operate it.</settings>	
	< <editing communication="" ecu="" setting="" the="" values="" with="">></editing>	
	It is not necessary to operate it usually.	
	Comment	ê ×
INDUSTRIAL ENGINE / Engine / E	xpert	ONLINE

4 Click "Exchange Information Management" and "Exchange Cancel" on the tab "Data Management".

SMARTASSIST-Direct	
File(F) View(V) Tool(T) Help(H)
🔊 Main Menu 🖪 🔹 📼	
MenuToolBar & ×	
ECU Access	
Data Management	<pre><operations be="" can="" connected="" ecu="" performed="" that="" the="" without=""></operations></pre>
Diagnostic Data (Display)	The communication connection to the center is included and a necessary function is
Product Operation Data (Display)	Included.
ECU Soft Download	
Trim Data Download	
Manual Search	< <manually components="" data="" on="" re-placed="" upload="">></manually>
Saved Data	
Exchange Information	Exchange Complete int and software updates.
Database Access	Exchange Cancel
Advanced Settings/Additional Settings	↑
Inh Assistant	
000 ASSIStant	
	Comment & ×
AGRICULTURE / Tractor / Expert	ONLINE

- **5** The Exchange Information Management (Cancel) Screen is displayed.
 - Operation Name selection

Select "Replace ECU (onboard reprogramming)" "Replace ECU (offboard reprogramming)""Overwrite/correct (onboard reprogramming)", "Replace Pump (copy correction values)", "Replace Nozzle (copy correction values) etc.

- 2 Checkbox when canceling replacement
- 3 Model
- 4 Serial No
- 5 ECU Name
- 6 Write Mode
- 7 Download Data
- 8 Write Data
- 9 Send button

hange infor	rmation management (Cancel)						
eration	Name Software Upd	ate (Onboard I	Reprogramming) -				
ancel	Model	Serial No	ECU Serial No.	ECU Name	Write Mode	Download Date	
	4TNV94HT-ZXSRA	00117	9960900888	ENGINE	ECU Soft Update	27 October,2015	
2	3	4		5	6	7	
			III.				
e selec	ted work is canceled	, and the one v	"" with download inform	nation is transmit	ted to the manager	ment	
e selec ver.	ted work is canceled	, and the one w	" with download inform	nation is transmit	ted to the manager	ment	Car
selec ver. ase se	ted work is canceled	, and the one v act the display	۳ with download inform red work, and push [٩	nation is transmit Send] button.	ted to the manager	ment Send	Car

377

6 The Exchange Information Management (Cancel) Screen is displayed. Click the "Task Name" tab and select the task name of cancellation you want.

Sign Exchange information management (Cancel)				×
Operation Name Software Update (Onboard Reprogramming) -	← Click			
Cancel ECU Exchange (Onboard Reprogramming)	ECU Name	Write Mode	Download Date	W
4TN ECU Exchange (Off board Reprogramming)	ENGINE	ECU Soft Update	27 October,2015	
Software Update (Onboard Reprogramming)				
Pump Exchange (Trim Data Copy)	J.			
The selected work is canceled, and the one with download info	rmation is transmit	ted to the manager	ment	
server.			Send	ancel
Please set the work name, select the displayed work, and push	[Send] button.		Send	ancer

7 Select the task name of cancellation you want, then tick the check mark for "Cancel" when the ECU software corresponding to cancellation appears, and click "Send".

Cance ←→ ₪	el Model 4TNV94HT-ZXSRA	Serial No 00117	ECU Serial No. 9960900888	ECU Name ENGINE	Write Mode ECU Soft Update	Download Date 27 October,2015

8 The Exchange Information Management (Cancel) process starts.



9 A message box notifies you when the Exchange Information Management (Cancel) process has finished. Click "OK".



10 The Exchange Information Management (Cancel) Screen displays.

Click "Cancel" and return to the main menu.

Exchange information management	(Cancel)		×	
Operation Name All Iter	n		•	
Cancel 🗌 Model	Serial No	ECU Serial No.	ECU Name	
• [*	
The selected work is ca download information is	anceled, and the transmitted to	ne one with		
server.	, tranomitted t	o the management	Send Cancel	←c
Please set the work na and push [Send] button	me, select the	displayed work,	**********	
and pass [solid] parton				2

11 The Main Menu screen starts up, and the Exchange Information Management (Cancel) task is finished.

SMARTASSIST-Direct	
$File(\underline{F}) View(\underline{V}) Tool(\underline{T})$	Help(<u>H</u>)
🔝 Main Menu 🗇 🔹 📼	
MenuToolBar & ×	
ECU Access Data Management	<operations be="" can="" connected="" ecu="" performed="" that="" the="" without=""></operations>
Diagnostic Data (Display)	The communication connection to the center is included and a necessary function is included.
Product Operation Data (Display)	
ECU Soft Download	
Trim Data Download	
Manual Search	< <viewing data="" ecu="" saved="" the="">></viewing>
Saved Data	
Exchange Information Management	View and compare the saved data of ECU in the diagnostics, start screen Data that has been collected at other workstations must be imported from the Data Management menu using "Save Data"
Database Access	
Advanced Settings/Additional Se	
Job Assistant	ļ
	Comment 5 ×
· · · · ·	
AGINICULIURE / Mactor /	Cheine

14.4 Alarm Function when Replacement Data is Not Uploaded

Alarm Function when Replacement Data is Not Uploaded for 30 Days

The "Replacement Data Not Uploaded for 30 Days" alarm function is displayed 30 days after one of the below conditions is met.

- No matter whether data was downloaded are not, the writing or cancellation process has not been performed.
- No matter whether the downloaded data was written to the ECU or the replaced pump (correction values), the upload process was not performed.
- No matter whether the ECU was replaced or not, the automatic upload could not be performed because there is no connection to the Internet.

14.4.1 Alarm Screen (During Online Operation/Data Download/Not Yet Written)

- **1** This screen is displayed during the online connection.
- 2 Select "Proceed to writing" or "Cancel writing", and click "Select".

Signature Exchange Info Upload	×
Model : 4TNV98T-ZXWTB	
SerialNo. : G9764	
ECU Name : ENGINE	
The processing condition of the above ECU software is unknown. Please specify the processir	ng.
Click→ [●] Write in future	
© Write cancel	
Select Click	

14.4.2 Alarm Screen (During Online Operation/ECU Not Yet Replaced)

- **1** This screen is displayed during the online connection.
- 2 Select "Proceed to writing" or "Cancel writing", and click "Select".



14.4.3 Alarm Screen (During Online Operation/Pump Not Yet Replaced (Trim Data Write))

- **1** This screen is displayed during the online connection.
- 2 Select "Proceed to writing" or "Cancel writing", and click "Select".



14.4.4 Alarm Screen (During Offline Operation/Automatic Replacement Completion Process Not Yet Performed)

- **1** This screen is displayed during the offline connection.
- 2 Connect to the Internet and make sure that the system is able to send.



15. Data Management / Update Function

15.1 Data Management Function

Data Management Function

When exchanging diagnosis results and maintenance data between SMARTASSIST-Direct users on different PCs, it is necessary to import and export data in a usable format with the data management function.



For data to be usable by SMARTASSIST-Direct, it is copied by a specific method from the PC (export), and stored at a specified folder (import).

Note When data is exported from a PC, user information is stored together with the data (history management).

Start Data Management from the Main Menu, "Saved Data".

SMARTASSIST-Direct		×
File(F) View(V) Tool(T) Help(H)		
🔊 Main Menu 🗗 🔹 📼		
MenuToolBar & ×		
ECU Access Data Management	<operations be="" can="" connected="" ecu="" performed="" that="" the="" without=""></operations>	
Diagnostic Data (Display)	The communication connection to the center is included and a necessary function	i is
Product Operation Data (Display)		
ECU Soft Download		
Trim Data Download		
Manual Search	Analyzing data on the workstation>>	Ī
Saved Data	Import	
Exchange Information	Export and delete data, and edit memos about data saved on the workstat	ion.
Management	Delete Mara Edit	
Database Access	Meno Edit	
Advanced Settings/Additional Settings		
Job Assistant		
	Comment	₽×
AGRICULIURE / Tractor / Expert	ON	LINE

15.1.1 Import Function

The object Items of the import function are shown below.

All Data	All Data Shown Below
Writing Data	ECU Software (Engine)
	ECU Software (Machine)
	ECU Software (Driver)
	Pump Correction Values
	Nozzle Correction Values
Processing the Service ECU	ECU Software (Engine)
	ECU Software (Machine)
	ECU Software (Driver)
Error Diagnosis Data	ECU Storage Data
	Data Logging
	Active Control
	Hysteresis
	Data Logging User Settings
Product Operation Data	Save Data
	Maintenance Information Clear Table
Campaign	ECU Soft
Upload data	Campaign write data
Pattern drive	Save data
	Scenario file

Note The imported ECU Software cannot be exported.

15.1.2 Export Function

The object Items of the export function are shown below.

Writing Data	ECU Software (Engine)		
	ECU Software (Machine)		
	ECU Software (Driver)		
	Nozzle Correction Values		
Error Diagnosis Data	ECU Storage Data		
	Data Logging		
	Active Control		
	Hysteresis		
	Report File		
	Data Logging User Settings		
Product Operation Data	Save Data		
	Maintenance Information Clear Table		
System Management Data	Job List		
	Software Writing Log		
Upload data	Campaign write data		
Pattern drive	Save data		

Note The exported ECU software does not remain on the PC (It is not copied).
15.1.3 Delete Function

The object Items of the delete function are shown below.

Writing Data	Nozzle Correction Values
Processing the service ECU	ECU Software (Engine)
	ECU Software (Machine)
	ECU Software (Driver)
Error Diagnosis Data	ECU Storage Data
	Data Logging
	Active Control
	Hysteresis
	Data Logging User Settings
Product Operation Data	Save Data
	Maintenance Information Clear Table
System Management Data	Job List
	Software Writing Log

15.1.4 Memo Edit Function

The object Items of the memo edit function are shown below.

Error Diagnosis Data	ECU Storage Data
	Data Logging
	Active Control
	Hysteresis
	Data Logging User Settings
Product Operation Data	Save Data

15.2 Data Update Function

15.2.1 Types of Data Updates

There are 3 methods to update necessary data for SMARTASSIST-Direct.

- Automatic scheduled update
- Auto Update upon login to the center
- Manual update by the user when connected to the center

Automatic scheduled update

This applies to data specified for auto updates.

The data is updated in regular intervals (once per quarter) or when a new model is released.

1	Data for correction of the existing data
2	Files corresponding to the new models
3	Additional function of SMARTASSIST-Direct
4	Program correction data of SMARTASSIST-Direct
5	Maintenance information data of product operation data function
6	Compatible information data between engine and machine model

Auto update upon login to the center

Important data and data that is changed in short intervals is automatically sent and updated upon login to the center.

1	Update the security period (license information)	
2	2 Average value data per model of product operation data function and year	
	shipment	
3	News data for News Link	

Remark It is updated at login by this process.

SMARTASSIST-Direct	t	
Dov	vnloading News Cont	ents
Step	: 1	5 / 40

If a connection to the product is established through a menu selection during an update of the error diagnosis data, an alarm is displayed that confirms whether the data update should be interrupted. The purpose of this is to exclude the possibility of misuse of the product.



Manual update by the user when connected to the center

This applies to data selected for download by the user.

1	ECU software (pump correction values and customization data)
2	Manual data for manual link
3	Product operation data saved in the center

1 SMARTASSIST-Direct	And and and a subscription of the local division of the local divi	1 SMARTASSIST
$File(\underline{E}) View(\underline{V}) Tool(\underline{I})$	Help(<u>H</u>)	File(E) Vi
🖄 Main Menu 🖪 🔹 📼		S Main M
MenuToolBar # ×		MenuTool
ECU Access		
Data Management	 Operations that can be performed without the ECU connected> 	
Diagnostic Data (Display)	The communication connection to the center is included and a necessary function is i	
Product Operation Data (Display)		Technical M
ECU Soft Download		Product Op
Trim Data Download		Get Func D
Manual Search	< <viewing data="" ecu="" saved="" the="">></viewing>	Advanced
Saved Data		
Exchange Information Management	View and compare the saved data of ECU in the diagnostics, start screen Data that h collected at other workstations must be imported from the Data Management menu us Data"	
Database Access	Data .	i i
Advanced Settings/Additional S		l 🖡
Job Assistant		
	Comment	l L
************		*****
<[] →		
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SMARTASSIST-Direct	
$File(\underline{F})$ $View(\underline{V})$ $Tool(\underline{T})$ $Help(\underline{H})$	
🔝 Main Menu 🖪 🔹 📼	
MenuToolBar & ×	
ECU Access	
Data Management	<work (controller)="" communicating="" done="" ecu="" is="" that="" the="" with=""></work>
Database Access	The communication connection to the center is included and a necess
Technical Manual	included.
Product Operation Data	
Get Func Diag Test Result	
Advanced Settings/Additional Settings	< <operation_adjustment and="" diagnosis="" failure="" of="" repair="">></operation_adjustment>
Job Assistant	
	The measurement and the preservation data that ECU maintains are d drive tests, are adjusted, and repaired.
F 1]
4 1	Comment
k j	

AGRICULTURE / Tractor / Expert	

16. Tool Function

16.1 Communication Settings

This is the screen to perform the communication settings between the SMARTASSIST-Direct and the product. When connected to the product, it is automatically set, so there is no need to operate during normal service. Change the settings only when instructed to do so by YANMAR.

Important The parameters for CAN communication can be changed. To change the parameters, you need to have sufficient knowledge of CAN. As the communication can be cut off, change only when instructed to do so by YANMAR.

Settings Screen

You can open the communication settings screen by clicking the "Communication Settings" button in the tab "Advanced Settings/Additional Settings" in the main menu. (You can also open the screen from the control screen.)



Figure 16-1 Control Screen

Figure 16-2 Main Menu

Control Method

1	Set Select	: Four types of names can be registered and read.	
2	Port	: Fixed at USB.	
3	Version Select	: As some initial ECU for small-sized engine have a different communication speci-	
		fication, the version can be selected.	
4	CAN ID	: There is no need to change the parameters for the CAN signal.	
5	Priority	: The standard value is 6.	
6	Physical Address	: The standard value is DA00h. In systems with multiple ECU, it is required to	
		change it to 00h.	
7	Function Address	: Fixed at DB33h.	
8	SA	: Address for the service tool, fixed at F0h.	



Figure 16-3 Graph Control Screen

16.2 Option Settings

This is a screen to perform the screen settings. Mainly, the following settings can be performed.

- Change the display unit.
- Change the language.

• Settings Screen

You can open the settings screen by clicking "Option" in "Tool" in the control screen.

SMARTASSIST-Direct		
File(F) View(V) Tool(T) Help(H)		
Tool Bar(T)	•	
Main Menu 🔽 🗹 StatusBar(S)		
MenuToolBar Communicati	ion Setting(C)	
Option(O)		
ECUA Font Size Se	etting(F)	1
Data Management		
Database Access		
Advanced Settings/Additional Settings		
Job Assistant		
	Comment	5 ×
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Control Method

1 Unit setting : Set the units for temperature and pressure.

2 Failure Display from : Change the display format of the error codes.

Point Normally set in the determined display format for the product, but if you want to see it in another error code format, you can change it.

- **Manual Language** : Set the language for the manual link data of the error diagnosis function.
- 4 Language Setup : Change the display language of SMARTASSIST-Direct.
- 5 Set : Confirm the changed content.



17. Glossary

Abbrevia-	Name	Content
tion		
BS	Block Size	Flow control related parameters used in ISO 15765
CAN	Controller Area Network	Communication standard used in the in-vehicle LAN
CSV	Comma Separated Values	File format used in PC
DA	Destination Address	ID information for the CAN communication data
D-SUB	Connector Standard	-
DTC	Error Diagnostic Code	Coded information according to the failure content
ECU	Engine (or Electronic) Control Unit	Also called ECM.
FFD	Freeze Frame Data	Data related to before and after the failure
FMI	Failure Mode Identifier	Detailed failure information added to the DTC
LID	Local Identifier	ID information specific to the controller
oc	Occurrence Counter	Number of DTC occurrences
PC	Personal Computer	-
PF	Protocol Data Unit Format	ID information for the CAN communication data
PDM	Product Data Management	-
SA	Source Address	ID information for the CAN communication data
SAE	Society of Automotive Engineers	-
Sno.	Serial Number	Manufacturing serial number for engine, pump and ECU
SPN	Source Parameters Number	Common ID used in SAE J1939
USB	Universal Serial Bus	Serial communication port used in PC

18. Terminal Information (Version Information)

You can check the SMARTASSIST-Direct software information.

- Software version information.
- Updated information of the corresponding models.
- License expiration date and authority information.

Check screen

You can open the check screen by clicking "Terminal Information" in the tab "Advanced Settings/Additional Settings" in the main menu. (You can also open the screen from the control screen.)

SMARTASSIST-Direct	
File(<u>E</u>) View(<u>V</u>) Tool(<u>T</u>) Help(<u>H</u>)	
🖄 Main Menu 🖪 🚸 📼	
MenuToolBar # ×	
ECU Access Data Management Database Access Advanced Settings/Additional Settings Communication Settings Terminal Information Manual Deletion Job Assistant	<settings action="" and="" functions="" optional="" regarding="" system=""> In usual service, it is not necessary to operate it. Click <cdisplay all="" settings="" terminal="">> Terminal information is displayed. Comment</cdisplay></settings>
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SMARTASSIST-Direct	C. Contractory Contractory Contractory	
File(F) View(V) Tool(T)	Help(H)	•
	Version Information(V)	
🔊 Main Menu 🖪 🚸 📼	Control Manual(M)	
MenuToolBar	USB Driver Install Method(I)	
FCILAccoss		

• Version Information Screen

SMARTASSIST-Direct	t(Market)		OK
Version 2.5.0-W	Release	e T02.04	4.02
Copyright (C) 2011 Y	ANMAR CO.,L	TD	
Version Information Pr	oduct Catego	ry Add	Functic
Module/Table	Version		×
Main Module	2.5.0.0		
Start Module	2.5.0.0		W.
Common Module	2.5.0.0		
Communication Module	2.5.0.0		
Control Module	2.5.0.0		
Core_Client Module	2.5.0.0		
Ecu_Common Module	2.5.0.0		
Interface Module	2.5.0.0		
ISO14229 Module	2.5.0.0		*

• Updated Information Screen of the Supported Models

Version 2.5.0-V	N Release T02.0-	4.02
Version Information	on Product Category Add	Functic
12/June/2016 New models are added,so Construction Machine <vehicle &="" engine=""> Vi080-1B Multi Purpose Truck <vehicle &="" engine=""> DS1C-610RS DS1C-610RT</vehicle></vehicle>) please confirm it.	E
<pre><catalog connectable<br="" of="">Engine 2GEC0 3INV84T-Z 4INV84T-Z 3INV88-Z 3INV88-Z 3INV88-Z</catalog></pre>	e Controller>	

• License Information Screen

- **1** Off-line use time limit : Display the security check period.
- 2 Model limitation : Presence and absence of the utilization limitation by model
- 3 Commodity field : Available product category
- 4 Use authority : License mode
- **ECU Type limitation** : Presence and absence of the utilization limitation by ECU/controller
- **Note** To use the SMARTASSIST-Direct, a security check is required every 3 months.

Check this screen periodically and make sure that your license does not become invalid. Start the SMARTASSIST-Direct with your PC connected to the Internet. The software automatically communicates with the center and the security check is performed.

SMARTASSIST-Dir Version 2.5.0-W	Release T02.04.02	<
y Add Function Impro	ovement License Information	
Item	Data	*
License Serial No.	00000798	-11
Date of issue	24 September,2011	
Off-line use time limit	29 August,2016	
 Model limitation	None	
Commodity field	Agriculture	
Inducing ahead	YANMAR Engine	
Use authority	Technician	-

19. Error Screen and Warning Screen

Various "Error Screen" and "Warning Screen" appear while you are using the SMARTASSIST-Direct.

19.1 Error Screen

Screen when a failure occurred mainly in the stage of communication processing between the SMARTASSIST-Direct and the product.



Figure 19-1 Error screen example

Error Message List

No.	Error message	Cause	
1	Error code: 1001	● <u>Undefined error occurred (0x0000007) (0x0000008)</u>	
	Error content: Not connected (code)	(0xFFFFFFD)	
	Process message: "Check the commu-	When the I/F Box is not connected	
	nication cable and	When the ECU power is not turned on	
	the ECU power sup-	The USB driver is not correctly installed	
	ply".	Incomplete setting of PDIB32.dll (production bench only)	
	*The code is displayed in the return value from the I/F Box in hexadecimal.	 Time-out occurred (0x0000009) Message buffer is empty (0x0000010) This error occurs when the source address is different. 	

2	Error code: 1002	Error from the I/F box determined.
	Error content: Abnormal communica-	(0xFFFFFFFE): When there is a problem in the ECU side set-
	tion (code)	ting (EEPROM fault, etc.): 1002
	Process message: "Upgrade the ver-	 Unsupported function is requested (0x00000001).
	sion of the ECU, IF/	Invalid channel ID is specified (0x00000002)
	Box, and service	Invalid protocol ID is specified (0x0000003)
	tool."	Null pointer is specified (0x00000004)
		Invalid message buffer size is specified (0x00000005)
	*The code is displayed in the return	Invalid flags are specified (0x0000006)
	value from the I/F Box in hexadecimal.	Invalid message is specified (0x0000000A)
		 Invalid time interval is specified (0x000000B)
		Periodic Msg Filter setting that exceeds the limit is request-
		ed (0x000000C)
		 Invalid Msg ID is specified (0x000000D)
		● Invalid Error ID is specified (0x000000E)
		 Invalid loctl ID is specified (0x000000F)
		● Message buffer is full (0x00000011)
		Message buffer is overflown (0x00000012)
		Invalid pin number is specified (0x00000013)
		 Specified Channel ID is in use (0x00000014)
		 Protocol ID in the message is invalid (0x00000015)
		Tester message transmission failed (0x800D0001)
		ECU reception error occurred (0x800E0001)
		● ECU message checksum error (0x800F0001)
		● ECU message structure error (0x80100001)
		● ECU message byte time error (0x80110001)
		● ECU message time error (0x80120001)
		Other errors
		(0xFFFFFFF): Incorrect argument error: 1002
		(0xFFFFFFC): Incorrect response data error: 1002
		(0xFFFFFFB): Security access denial error: 1002
		(0xFFFFFFA): Different protocol error: 1002
		(0xFFFFFF9): Abnormal memory error: 1002

3	Error code: 1003	When the following negative response is received from the ECU
	Error content: Abnormal service re-	● General refusal (0x10)
	sponse (code)	Service not provided (0x11)
		 Subfunction not provided (0x12)
	*The code is displayed from the ECU	When the conditions of the ECU are not met (active con-
	in hexadecimal. When there is no re-	<u>trol, etc.)</u>
	sponse, the display is blank.	 Out of request range (0x31)
		 Security access refused (0x33)
	Process message: "Check the version	● Invalid security key (0x35)
	of the ECU, IF/Box,	Download not permitted (0x40)
	and service tool."	Incompatible download format (0x41)
		 Specified download address disapproved (0x42)
		 Number of download request bytes disapproved (0x43)
		 Service not provided in the current diagnostic mode (0x78)
		No response from the ECU
		No response from the ECU

Note When an error other than the underlined error code occurred, it is possibly related to development of the product. Contact YANMAR.

19.2 Error (Warning) Message

■At Application Start-up

Function	Process	Message (example)	Cause	Operation after display	Remark
Direct start-up	License	There is a problem with the license. Please repeat the set-up.	Installation failure. There is a problem with the license file. (YSASS_License.lic)	Application closed.	
		Unable to start because the version is incorrect. Please repeat the set- up.	Installation failure. Updating the module failed.	Application closed.	
			The module structure of the version is incorrect (not matched).		
		The license number may be invalid or the initialization was not completed. Please close the software, recheck the license and User ID. Confirm the	The license file and the user information are not collected.	Start with the default mode.	
		initialization.	The license key of the license file does not match the install key.	Start with the default mode.	
			License is expired.	Start with the default mode.	
			When the license is incon- sistent	Start with the default mode.	
		The license security period is about to expire on xxxx.xx.xx. You must connect to the internet to update.	License will be expired.	Normal operation (Only for the displayed valid term)	
		The license was not updated because the license update file is incorrect. The software utilization term has expired. If the latest software is not installed within 7 days, writing is disabled.	License has expired.	Normal operation (Only for the displayed valid term)	
		License conditions were changed, The utilization term is until XXXX/XX/ XX.	License was updated.	Normal operation	
Login		Enter the user ID.	Your user ID is not entered at login.	Re-enter login	
		Enter your password.	Your password is not entered at login.	Re-enter login	
		The user ID or your password is different. Note: Using a common password with YDS might have changed the password.	Wrong user ID or pass- word is entered.	Re-enter login	
		To update the setting file:			
		Exit the software, confirm that the computer is connected to the Internet,			
		Click OK to exit.	When you exit the pro- gram	When "Yes", Direct closes. When "No", Exit is canceled.	
Start Menu	Exit operation	Click OK to exit.	When you exit the pro- gram	When "Yes", Direct closes. When "No", Exit is canceled.	
Main Menu		Target is not found.	When there is no parts replacement information in the parts replacement screen.	Process is can- celed	
		Reading the save data failed.	For some reason (internal cause or breakage of a file), reading the product operation data failed.	Process is can- celed	
		Operation is not possible because the server is offline.	The menu is selected when the server is offline.	Not operable	Currently not supported

Function	Process	Message (example)	Cause	Operation after display	Remark
Common for each view	Function change	Switch to XXXX function?	The function selection combo box for each func- tion screen is changed.	When "Yes", execute change. When "No", do not change.	
	ECU change	Switch to XXXX?	The ECU selection combo box for each function screen is changed.	When "Yes", execute change. When "No", do not change.	

Defect Display

Function	Process	Message (example)	Cause	Operation after display	Remark
Current Defect	Manual dis- play	The manual does not exist.	The selected manual file does not exist.	The manual is not displayed.	

Freeze Frame Data

Function	Process	Message (example)	Cause	Operation after display	Remark
Trend Graph	Graph Set- tings	Check the conditions of the range setting. (Select the settings so that the lower limit is smaller than the upper limit.)	In the minimum and maxi- mum settings for graph, a minimum value that is greater or equal to the maximum was set.	Re-enter in the graph settings screen.	

■Diagnostic Tests

Function	Process	Message (image)	Cause	Operation after display	Remark
Digital Out	Data Set	Unable to apply the change.	When the selected data cannot be changed	No action.	
	Screen change	Stop the forced driving?	When the screen change is executed while execut- ing the force operation (fixed control)	When "Yes", recover control. When "No", control remains fixed. Change the screen, respec- tively.	
Active Control	Data Set	Unable to apply the change.	When the selected data cannot be changed	No action.	
		Stop the forced driving?	When the screen change is executed while execut- ing the force operation (fixed control)	When "Yes", recover control. When "No", control remains fixed. Change the screen, respec- tively.	
		Switch to the hysteresis graph?	When the hysteresis mea- surement is performed and exited	When "Yes", change to the graph screen. When "No", no action.	
Active Control (Graph)		Check the conditions of the range setting. (Select the settings so that the lower limit is smaller than the upper limit.)	In the minimum and maxi- mum settings for graph, a minimum value that is greater or equal to the maximum was set.	No action. Re-enter in the graph settings screen.	
		Save the measured data?	When saving the mea- sured data.	When "Yes", save. When "No", do not save.	
		Measure data saved.	The measured data is complete.		
		Saving the measured data failed.	For some reason, saving the measured data failed.	Saving is inter- rupted.	
Hysteresis Measure		Same as the Active Control (Graph)			

■Data Logging

Function	Process	Message (image)	Cause	Operation after display	Remark
Data Moni- tor		reating the user settings file failed.	For some reason (internal cause), saving the user settings information file failed.	The process is canceled.	
		Saving the measured data failed.	For some reason (internal cause), saving the mea- sured data failed.	The process is canceled.	
		Polling mode is not supported.	When the polling mode is set for the sampling set- tings in the beginning of logging and the ECU does not support the polling mode.	The process is canceled.	
		Acquiring saved user settings data failed.	For some reason (internal cause), reading the user settings information file failed.	The process is canceled.	
		Settings are not saved.	When trying to read the user settings information file, but nothing was saved	The process is canceled.	
Save Data		reating the user settings file failed.	For some reason (internal cause), saving the user settings information file failed.	The process is canceled.	
		Saving the measured data failed.	For some reason (internal cause), saving the mea- sured data failed.	The process is canceled.	
Trend Graph		Check the conditions of the range setting. (Select the settings so that the lower limit is smaller than the upper limit.)	In the minimum and maxi- mum settings for graph, a minimum value that is greater or equal to the maximum was set.	No action. Re-enter in the graph settings screen.	

Settings

Function	Process	Message (image)	Cause	Operation after display	Remark
Configura- tion (Configu- ration)	Data Set	Unable to apply the change.	The selected data cannot be changed.	No action.	
Calibration		Same as the configuration			
Tuning		Same as the configuration			
Initial Set- tings	Data Set	Unable to apply the change.	The selected data cannot be changed.	No action.	
	Data Set	Sequence data not found.	Not processed, due to inconsistency in the se- quence settings.	The process is canceled.	
	Data Set	Unable to extract local ID from the process ID.	Not processed, due to inconsistency in the se- quence settings.	The process is canceled.	

Development mode

Function	Process	Message (image)	Cause	Operation after display	Remark
Common ID access		This summary CID cannot be added because it is set as a string. Check the settings file.	The specified CID is set as a string.	The process is canceled.	
		The CID is not registered in the LID/CID response list.	SPN is not set in the set- tings file. (In case of ISO 14229)	The process is canceled.	
Common ID access	Processing file	File is defective. (verification error)	The file model did not match while reading the settings file.	The process is canceled.	
		The file can't open.	Settings file not found.	The process is canceled.	
		The file can't open.	For some reason (internal cause), saving the settings file failed.	The process is canceled.	
Common ID access	Processing file	Unable to apply the change.	The selected data cannot be changed.	The process is canceled.	
Common ID access (text)		This summary XXXXCID cannot be added because it is set as 2D or 3D map. Check the settings file.	2D, 3D maps are set in the common ID access (text) function.	The process is canceled.	
		The CID is not registered in the LID/CID response list.	SPN is not set in the set- tings file. (In case of ISO 14229)	The process is canceled.	
		File is defective. (verification error)	The file model did not match while reading the settings file.	The process is canceled.	
		The file can't open.	Settings file not found.	The process is canceled.	
		The file can't open.	For some reason (internal cause), saving the settings file failed.	The process is canceled.	
	Data Set	Unable to apply the change.	When the selected data cannot be changed	No action.	
Address specified access		Unable to apply the change.	Out of the address range	No action.	
			The "+F" row is pressed by WORD specification.	No action.	
Data ID specified access					

■ECU Software Writing

Function	Process	Message (image)	Cause	Operation after display	Remark
Prepara- tion for writing		Copying the file to the write process sheet failed.	For some reason (internal cause), copying the down- loader file and the writing settings file failed.	The process is canceled.	
		Reading the engine production history data failed.	For some reason (internal cause), reading the engine production historical data failed.	The process is canceled.	
		Reading the individual data definition file failed.	For some reason (inter- nal cause), reading the individual data definition file failed.	The process is canceled.	
		Reading the initial individual data file failed.	For some reason (internal cause), reading the initial individual file failed.	The process is canceled.	
		Reading the implement production history data failed.	For some reason (internal cause), reading the implement production historical data failed.	The process is canceled.	
		Reading the specified pump correction data file failed.	For some reason (internal cause), reading the pump correction data file failed.	The process is canceled.	
		Reading the specified ROM writer data file (ZIP) failed.	For some reason (internal cause), reading the ROM writer data file (ZIP) failed.	The process is canceled.	
		Reading the specified initial individual data file (LZH) failed.	For some reason (internal cause), reading the initial individual file (LZH) failed.	The process is canceled.	
		Reading the specified ROM writer data file (LZH) failed. Copy UNLHA32.DLL to the SYSTEM32 folder.	Because the compres- sion/decompression DLL is not set, reading the ROM writer data file (LZH) failed.	The process is canceled.	
		Reading the individual data definition file failed.	Because the compression/ decompression DLL is not set, reading the initial individual file (LZH) failed.	The process is canceled.	
		Mask processing of the map file failed.	For some reason (internal cause), reading or writing the map file failed.	The process is canceled.	
		Writing the individual data file failed.	For some reason (inter- nal cause), reading the individual file failed.	The process is canceled.	
		Reading the specified ROM writer data file (ZIP) failed.	For some reason (internal cause), extracting the ROM writer data file (ZIP) failed.	The process is canceled.	
		Reading the individual data definition file failed.	For some reason (internal cause), extracting the initial individual file (ZIP) failed.	The process is canceled.	
		Creating the write process sheet failed.	For some reason (inter- nal cause), writing the process sheet failed.	The process is canceled.	
		Custom map file not found.	For some reason (ROM writer data, internal cause), the custom map file could not be found.	The process is canceled.	
		Control map file not found.	For some reason (ROM writer data, internal cause), the control map file could not be found.	The process is canceled.	
		Mask map file not found.	For some reason (ROM writer data, internal cause), the mask map file could not be found.	The process is canceled.	
		Control program file not found.	For some reason (ROM writer data, internal cause), the control program file could not be found.	The process is canceled.	

Function	Process	Message (image)	Cause	Operation after display	Remark
Prepara- tion for writing		Several custom map files files found. Please select custom map files file. File List XXXXXXXXXXXXXXXxxx XXXXXXXXXXXXXXXxxx XXXXXXXXXXXXXXXXxxx Set	For some reason (ROM writer data, internal cause), multiple custom map files are found after extracting the ROM writer data.		
		engine production history files files found. Please select engine production history files file. File List XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	For some reason (ROM writer data, internal cause), multiple engine production history files are found after extracting the ROM writer data.		
		pump production history files files found. Please select pump production history files file. File List XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	For some reason (ROM writer data, internal cause), multiple pump production history files are found after extracting the ROM writer data.		
		individual data definition files files found. Please select individual data definition files file. File List XXXXXXXXXXXXIDEF XXXXXXXXXXXXXIDEF Set Cancel	For some reason (ROM writer data, internal cause), multiple individual data definition files are found after extracting the ROM writer data.		
		Initial individual data files Select Several initial individual data files files found. Please select initial individual data files file. File List XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	For some reason (ROM writer data, internal cause), multiple initial individual files are found after extracting the ROM writer data.		
		Intel Individual data(INDEX) files Select Several Initial Individual data(INDEX) files files found. Please select Initial Individual data(INDEX) files files File List XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	For some reason (ROM writer data, internal cause), multiple initial individual files (INDEX) are found after extracting the ROM writer data.		

Function	Process	Message (image)	Cause	Operation after display	Remark
Prepara- tion for writing		© control map files Select Several control map files files found. Please select control map files file. File List XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	For some reason (ROM writer data, internal cause), multiple control map files are found after extracting the ROM writer data.		
		mask map files Select Several mask map files files found. Please select mask map files file. File List XXXXXXXXX.S XXXXXXXXX.S Set Cancel	For some reason (ROM writer data, internal cause), multiple mask map files are found after extracting the ROM writer data.		
		implement production history files Elect Several implement production history files files found. Please select implement production history files files File List XXXXXXXXXXXXXXXxxsgd XXXXXXXXXXXXXXxxsgd XXXXXXXXXXXXXXXxxsgd Set Cancel	For some reason (ROM writer data, internal cause), multiple implement production history files are found after extracting the ROM writer data.		
		control map files Select Several control map files files File List XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	Multiple files are found while reading the control map file.		
		Folder "Diag_Tool" not found in the extracted ROM writer data.	Folder "Diag_Tool" not found in the extracted ROM writer data.	The process is canceled.	
		Folder "Table" not found in the extracted ROM writer data.	Folder "Table" not found in the extracted ROM writer data.	The process is canceled.	
Flash writ- ing		There is no manufacturer code that matches the license.	The manufacturer code collected from the writing process sheet could not match the manufacturer code of the license.	The process is canceled.	
		The checksum of the manufacturer code does not match.	Checksum for the manu- facturer code of the writing process sheet did not match.	The process is canceled.	
		The checksum does not match.	Checksum of the writing process sheet did not match.	The process is canceled.	
		Delete the current control program and rewrite?	Check when the ECU, H/ W, and serial No. collected from the writing process sheet did not match.	When "Yes", con- tinue processing. When "No", inter- rupt processing.	
		ECU 3N does not match.	The ECU 3N code col- lected from the writing pro- cess sheet did not match.	The process is canceled.	
		ECU H/W part number does not match.	The ECU part No. col- lected from the writing pro- cess sheet did not match.	The process is canceled.	

Function	Process	Message (image)	Cause	Operation after display	Remark
Flash writ- ing		ECU H/W serial number does not match.	The ECU, H/W, and serial No. collected from the map file did not match.	The process is canceled.	
		Unable to count RMNC.	The RMNC count did not match when processing the service ECU.	The process is canceled.	
		CB reset failed.	For some reason (ECU and internal cause), reset- ting in the CB area failed.	The process is canceled.	
		Engine serial number does not match.	The engine serial No. collected from the map file did not match.	The process is canceled.	
		Engine type does not match.	The engine model col- lected from the writing pro- cess sheet did not match.	The process is canceled.	
		Unable to change this ECU to a service ECU (RMNC error).	The RMNC count did not match when processing the service ECU.	The process is canceled.	
		Unable to change this ECU to a service ECU (TRUN error).	The TRUN count did not match when processing the service ECU.	The process is canceled.	
		Model name does not match.	The model name did not match when processing the model check.	The process is canceled.	
		Deleting Flash failed.	For some reason (ECU and internal cause), delet- ing Flash failed.	The process is canceled.	
		Communication with ECU failed.	Communication with ECU failed while writing ECU.	The process is canceled.	
		Clearing DTC failed.	Deletion failed in the dele- tion process of the DTC area.	The process is canceled.	
		ECU reset failed.	For some reason (ECU and internal cause), reset- ting ECU failed.	The process is canceled.	
		Writing for EEPROM initialization failed.	For some reason (ECU and internal cause), writing for the EEPROM initialization failed.	The process is canceled.	
		Writing initial setting data failed.	For some reason (ECU and internal cause), writ- ing the initial data failed.	The process is canceled.	
		Verifying the key file failed.	Verifying the key collected from the writing process sheet failed.	The process is canceled.	
		Hard check of LY3 failed.	Hard check collection of LY3 (ECU S/N) failed.	The process is canceled.	
		Writing the manufacturer code failed.	For some reason (ECU and internal cause), writ- ing the manufacturer code failed.	The process is canceled.	
		The checksum of the object does not match.	For some reason (internal cause), checksum of the object writing (APL soft- ware, map file, individual data) did not match.	The process is canceled.	
		Download of object failed.	For some reason (ECU and internal cause), downloading the object (APL software, map file, individual data) failed.	The process is canceled.	
		Reading of common data failed.	For some reason (ECU and internal cause), reading the common data failed.	The process is canceled.	
		Reading of data ID failed.	For some reason (ECU and internal cause), read- ing the data ID failed.	The process is canceled.	
		Reading of map category failed.	For some reason (ECU and internal cause), reading the map category failed.	The process is canceled.	

Function	Process	Message (image)	Cause	Operation after display	Remark
Flash writ- ing		Reading of EEPROM failed.	For some reason (ECU and internal cause), read- ing the EEPROM data failed.	The process is canceled.	
		SBL download failed.	For some reason (ECU and internal cause), down- loading SBL failed.	The process is canceled.	
		Security access failed.	For some reason (ECU and internal cause), the security access (program- ming mode, adjustment mode) failed.	The process is canceled.	
		Writing of common data failed.	For some reason (ECU and internal cause), writing the common data failed.	The process is canceled.	
		Writing of data ID failed.	For some reason (ECU and internal cause), writ- ing the data ID failed.	The process is canceled.	
		Writing of EEPROM failed.	For some reason (ECU and internal cause), writ- ing the EEPROM data failed.	The process is canceled.	
		Rewriting the fingerprint of data rewrite failed.	For some reason (ECU and internal cause), rewrit- ing the data, rewriting the fingerprint failed.	The process is canceled.	
		Rewriting the fingerprint of software rewrite failed.	For some reason (ECU and internal cause), rewriting fingerprint of the software failed.	The process is canceled.	
		Unable to connect to the ECU because the license type is limited.	Because the limited mod- els of the license function is set, the limited models do not match.	The process is canceled.	
		License key does not match.	The license key collected from the writing process sheet did not match.	The process is canceled.	
		Unable to perform the abnormal writing process.	Displayed when connect- ed in the programming session before executing the abnormal writing.	The process is canceled.	
		Reading the write settings file failed.	Reading the write settings file collected from the writ- ing process sheet failed.	The process is canceled.	
		Reading the write process sheet file failed.	For some reason (internal cause), reading the writing process sheet failed.	The process is canceled.	
		Failed to write a three-level code	For some reason (ECU and internal cause), writ- ing the 3 level code failed.	The process is canceled.	
Flash ROM writing tool menu		Reading the download file (ZIP) failed.	For some reason (internal cause, corrupted file), reading the downloaded file failed.	The process is canceled.	
		The operation is currently not supported.	The download file type specified the files of 213, 2C3, and xx6.	The process is canceled.	
		Reading the key file failed.	For some reason (internal cause, corrupted file), reading the downloaded file failed.	The process is canceled.	
		The checksum does not match.	Checksum of the process sheet file collected from the extracted download file did not match.	The process is canceled.	
		Reading the write process sheet file failed.	Reading the process sheet file collected from the extracted download file failed.	The process is canceled.	

■ECU Software Writing

Function	Process	Message (image)	Cause	Operation after display	Remark
ECU Exchange		Copy-protection: unable to write.	Writing failed due to the ECU copy limit.	The process is canceled.	
		Unable to apply the change.	Writing to the ECU was not allowed.	The process is canceled.	
		Verification of data failed.	The check data did not match when manually entering the ECU data.	The process is canceled.	
		Unable to write because the model or machine number is different.	Model or Serial No of the ECU data is different.	The process is canceled.	
		Writing data to the ECU failed.	For some reason (ECU and internal cause), writ- ing the ECU failed.	The process is canceled.	
		The pump part code is different. Unable to write.	Do not perform writing except for the developer mode or the ECU is LY3. (If pump data is available.)	The process is canceled.	
Saving the report		Report format file not found.	For some reason (internal cause, file not installed), the format file could not be found.	The process is canceled.	
		Saving the report failed.	For some reason (ECU and internal cause), sav- ing the report failed.	The process is canceled.	

■Part Replacement

Function	Process	Message (image)	Cause	Operation after display	Remark
Pump re- placement		File not found.	The file could not be found in reading the EXCDPF file, the EXCSF file, and the EXCDOC file.	The process is canceled.	
		The BCC of XXXX does not match.	BCC did not match when reading the EXCEL file.	The process is canceled.	
		Unable to apply the change.	Writing to the ECU was not allowed in writing the part replacement.	The process is canceled.	
		Unable to write because the model or machine number is different.	Model or Serial No of the ECU data is different.	The process is canceled.	
		Writing data to the ECU failed.	For some reason (ECU and internal cause), writ- ing the ECU failed.	The process is canceled.	
		Reading the pump interchangeability file failed.	For some reason (internal cause), reading the pump compatibility file failed.	The process is canceled.	
		The replacement pump is not interchangeable. Unable to write.	When the replacement pump is not compatible.	The process is canceled.	
		The pump part code is different. Write the correct value?	A confirmation message is displayed to check whether or not to write the data when the mode is not the developer mode, the ECU is LY3, and the pump part code is different.	When "Yes", execute writing. When "No", inter- rupt processing.	
		The pump part code is different. Unable to write.	Do not perform writing except for the developer mode or the ECU is LY3.	The process is canceled.	
		The number is different. Write the correct value? (ECU: XXXX / Input: XXXX)	A confirmation message is displayed to check whether or not to write data when the name of the pump model matches up to the 11th character.	When "Yes", execute writing. When "No", inter- rupt processing.	
		Enter the parameter.	There is an omission in the input parameters of the ECU data.	The process is canceled.	
Pump re- placement		Verification of data failed.	The check data did not match when reading the EXCDPF file, the EXCSF file, the EXCDOC file and the old ECU data.	The process is canceled.	
			The check data did not match when manually entering the ECU data.	The process is canceled.	
Injector replace-		Unable to apply the change.	Writing to the ECU was not allowed.	The process is canceled.	
ment		The data is defective. Enter it again.	The data is defective in the injector data entry.	The process is canceled.	
		Writing data to the ECU failed.	For some reason (ECU and internal cause), writ- ing the ECU failed.	The process is canceled.	
Common	Saving the report	Report format file not found.	For some reason (internal cause, file not installed), the format file could not be found.	The process is canceled.	
		Saving the report failed.	For some reason (ECU and internal cause), sav- ing the report failed.	The process is canceled.	
		Engine ECU or SCR ECU is not connected. Continue the Replacement Process?	For machine types that require more than one replacement at the same time, the ECU on one side is not connected.	If "Yes", continue with limited func- tions. If "No", return to the main menu.	

■Part Replacement

Function	Process	Message (image)	Cause	Operation after display	Remark
Product operation data col- lection		Reading the unique ID table failed.	Occurs when the unique ID table file does not exist and the reading failed. (Opinf_UniqueID (K).tbl)	The process is canceled. Interrupt the product operation data collection and return to the main menu.	
		Reading the working machine initial setting table failed.	Occurs when the initial setting table file does not exist and the reading failed. (Opinf_InitSet (K).tbl)	The process is canceled. Interrupt the product operation data collection and return to the main menu.	
		Reading the data table for initial setting acquisition failed.	Occurs when the initial setting collection table file does not exist and the reading failed. (Opinf_InittemInfo.tbl)	The process is canceled. Interrupt the product operation data collection and return to the main menu.	
		Reading the operation data auxiliary setting table failed.	Occurs when the product operation data auxiliary setting table file does not exist and the reading failed. (Opinf_Setting_Sub.tbl)	The process is canceled. Interrupt the prod- uct operation data collection and return to the main menu.	
Product operation data col- lection		Reading the display format file failed.	Occurs when the display format file does not exist and the reading failed. "xxxxx" of the file name is the support information num- ber received from the ECU. (Opinf_Setting_XXXXX.tbl)	Although the screen (lifetime data, map, log) is not displayed, the data can be saved. Process- ing continues.	
		Saving failed.	Occurs when saving the data failed, such as the specified folder does not exist at the time of storing the product operation data file (for storing SA-D and uploading to the server), and the file with the same file name exists.	Processing con- tinues, because the screen can be displayed.	
Refer to the save data.		Save data not found.	Occurs when there are no SA-D save data files in the specified folder. (MngData\OperationData)	Transfer to the file selection screen.	
Operation time man- ual entry screen		No			

Function	Process	Message (image)	Cause	Operation after display	Remark
Lifetime data in- formation screen		Mean value data not found.	Occurs when the relevant average values for the displayed data could not be found at the time of dicking the average value display button.		
		Reading the mean value file (by model and year) failed.	Occurs when the relevant average values for the displayed data is found but the mean value file (by model and year) could not be found at the time of clicking the average value display button and the reading failed.		
		Reading the unique ID table failed.	Occurs when the unique ID table file does not exist and the reading failed. (Opinf_UniqueID (K).tbl)		
		Reading the save data failed.	Occurs when the read- ing failed including the incorrect data file format selected on the data se- lection screen at the time of clicking the save data display or reference data display button.	Return to the lifetime data screen display without reading the relevant data.	
		Reading the display format file failed.	Occurs when the display format file does not exist and the reading failed. "xxxxx" of the file name is the support information number received from the ECU. (Opinf_Setting_XXXXX.tbl)		
		Maintenance data not found.	Occurs when the relevant maintenance information for the displayed data could not be found at the time of clicking the mainte- nance information button.		
		Reading the maintenance data failed.	Occurs when the relevant maintenance information for the displayed data is found but the maintenance information file does not exist and the reading failed.		
		Excel write settings data not found.	Occurs when the display format file does not exist and the reading failed. "xxxxx" of the file name is the support information number received from the ECU. (Opinf_Setting_XXXXX. tbl)		
		Excel template file (XXXXXXX) not found.	Occurs when the template file for EXCEL out does not exist. "xxx" of the file name is described in the display format file. (Opinf_E_Template_XXX (K).xls)		
		The operation failed because writing to the save file failed. Check that the writing file is not open and perform the operation again.	Occurs when copying to the specified location of the template file for EX- CEL out failed or the file with the same file name exists.		
		Excel write settings data not found.	Occurs when opening the file failed including the display format file exists but the other program is opened for exclusive operation. (Opinf_Setting_XXXXX. tbl)		

Function	Process	Message (image)	Cause	Operation after display	Remark
Lifetime data in- formation screen		Unable to open Excel file (XXXXXXX).	Occurs when the EXCEL file could not be created.		
		Saving the maintenance data clear table failed.	Occurs when the file could not be created or the specified folder for the maintenance clear table file could not be found at the time of clicking the clear button.		
Map screen		Reading the unique ID table failed.	Occurs when the unique ID table file does not exist and the reading failed. (Opinf_UniqueID (K).tbl)		
Log screen		Reading the unique ID table failed.	Occurs when the unique ID table file does not exist and the reading failed. (Opinf_UniqueID (K).tbl)		
Product opera- tion data download		Operation is not possible because the server is offline.	Occurs when tried to dis- play the product operation data download screen in the offline condition (not connected to the server).	Without display- ing the prod- uct operation data download screen, return to the main menu.	
		Enter the nameplate model with 2 letters or more.	Occurs when the entry is not made in "nameplate model", or less than 2 characters are entered and the search button is clicked.	Search is not conducted.	
		Enter the user ID.	Occurs when the search button is clicked without entering "User ID" while the "Specified User ID No." is selected for the "Data Search Object".	Search is not conducted.	
		Please input years correctly.	Occurs when the numeric value except for 1 to 12 for "Month" of "Upload Date" or "Collection Date" is entered and the search button is clicked.	Search is not conducted.	
		Please input years correctly.	Occurs when only the "Month" is entered and not the "Year" in "Upload Date" or "Collection Date" and the search button is clicked.	Search is not conducted.	
		Download failed. Check of Connection.	Occurs when there is no response for the search result from the server.		
		Communication failed. Error code: 0 Message: 0	Occurs when an error oc- curred on the server side.		
		Response error Error code: XXXX	Occurs when the search result response from the server is an error.		
		More than 300 search results. Narrow down the search parameters.	Occurs when the search result exceeds the speci- fied number (300 items).	Search is not conducted.	
		Download failed. Check of Connection.	Occurs when the specified product operation data could not be downloaded.		
		Incorrect file.	Occurs when the down- loaded product operation data is structurally incor- rect.		
		Rename the operation data download file failed.	Occurs when the down- loaded product operation data could not be moved to the specified folder, such as the folder does not exist.		

■Data Management

Function	Process	Message (image)	Cause	Operation after display	Remark
Import	Execute	Unable to import XXXX.txt because the file format is wrong.	Importing a file with the file format that does not belong to the selected section or type was at- tempted.	No action. Return to the data manage- ment screen.	
		Registration of XXXX.xml failed. Retry?	When saving the file failed for some reason.	Press "Yes" to retry on the same file. Press "No" to not register and pro- cess the next file. Press "Cancel" to abort the process.	
		XXXX.zip is already registered. Overwrite?	Overwriting check when the file is already regis- tered.	Press "Yes" to overwrite. Press "No" to not overwrite and pro- cess the next file. Press "Cancel" to abort the process.	
		Model XXXX or machine number XXXX is already registered. Overwrite?	Confirming to overwrit- ing when the file with the same format and Serial No is registered for the ECU software and pump correction values.	Press "Yes" to overwrite. Press "No" to not overwrite and pro- cess the next file. Press "Cancel" to abort the process.	
Export	Execute	XXXX is already registered. Overwrite?	The file for export already exists in the output desti- nation (same file name).	Press "Yes" to export by over- writing the file. Press "No" to cancel the opera- tion.	
		Unable to export the specified data.	When trying to export a file that cannot be exported.	No action Return to the data manage- ment screen.	
		Unable to export the specified data because the data was imported.	The file that was attempt- ed to export cannot be exported because it is an imported file.	No action. Return to the data manage- ment screen.	
		Data export failed.	For some reason (internal cause), the export failed.	The process is canceled. Return to the data manage- ment screen.	
Delete	Select	Deleting XXXX failed.	For some reason (internal problem), it cannot be deleted.	The process is canceled. Return to the data manage- ment screen.	
Memo Edit	Select	Unable to edit because the memo was not found.	When there is no memo area in the data.	The process is canceled. Return to the data manage- ment screen.	
	Save	Saving the memo failed.	For some reason (internal cause), the memo regis- tration failed.	The process is canceled. Return to the data manage- ment screen.	

Manual

Function	Process	Message (image)	Cause	Operation after display	Remark
Download		Operation is not possible because the server is offline.	The "Manual" menu of the main menu is selected when the server is offline.	The process is canceled.	
		Download failed, Cancel process?	For some reason (internal cause or communication cause, etc.), downloading failed.	Press "Yes" to continue down- loading the next manual. Press "No" to interrupt downloading.	
		ZIP file not found.	The manual file (ZIP file) could not be downloaded.		
		It failed in download of Manual List. Check of Connection.	There was a problem while downloading the manual list.	The process is canceled.	
Initializa- tion and folder check		The data for the service manual of the acquired model does not exist.	Manual not found.		
Delete	Execute	Unable to delete XXXX.	There is no selected manual in the manual deletion screen.	The process is canceled.	

News Link

Function	Process	Message (image)	Cause	Operation after display	Remark
Download	Main Menu	Update of error diagnosis data in progress. The selected function can affect operation. Abort data update and execute the selected function?	Check when the ECU Access operation is selected while downloading.	Press "Yes" to interrupt downloading and execute the se- lected process. Press "No" to continue downloading and do not execute the selected process.	
News Link	Detail display	The file is not found.	Although the attached file was selected on the news detail screen, the specified file could not be found.	No action. (The attached file is not opened.) Return to the bulletin detail screen.	

Saving the ECU Storage Data

Function	Process	Message (image)	Cause	Operation after display	Remark
ECU Stor- age Data	Save	Saving the ECU data failed.	For some reason, saving failed.	The process is canceled. (Not stored)	Does not happen under normal circumstances.
Measure- ment data	Reading	Same as the ECU storage data			

Function	Process	Message (image)	Cause	Operation after display	Remark
Common server communi- cation		Process aborted.	When processing is aborted by the cancel but- ton while communicating to the server	The process is canceled.	
		Communication failed. Error code: XX Message: XXXX	This occurs when the content of the "Status" tag is "False". (* This is improbable in the current specification according to YISS.)	The process is canceled.	Display the con- tent of the server response tags "errorcode" and "message".
		Response error Error code: XX	This occurs when an un- defined response code is received from the server	The process is canceled.	Display the con- tent of the "resp- code" tag
		Response error Error code: 10 (The specified model was not found.)	This occurs when the response code 10 is received from the server.	The process is canceled.	If the "resp-code" tag has the value "10".
		Response error Error code: 20 (Specified No. was not found.)	This occurs when the response code 20 is received from the server.	The process is canceled.	If the "resp-code" tag has the value "20".
		Response error Error code: 30 (The digit number of serial No is unusual.)	This occurs when the response code 30 is received from the server.	The process is canceled.	If the "resp-code" tag has the value "30".
		Response error Error code: 40 (It is unauthorized.)	This occurs when the response code 40 is received from the server.	The process is canceled.	If the "resp-code" tag has the value "40".
		Response error Error code: 50 (There is no object.)	This occurs when the response code 50 is received from the server.	The process is canceled.	If the "resp-code" tag has the value "50".
		Response error Error code: 60 (The exchange is being processed.)	This occurs when the response code 60 is received from the server.	The process is canceled.	If the "resp-code" tag has the value "60".
		Response error Error code: 70 (It is ECU while using it.)	This occurs when the response code 70 is received from the server.	The process is canceled.	If the "resp-code" tag has the value "70".
		Response error Error code: 80 (Part exchange information is abnormal.)	This occurs when the response code 80 is received from the server.	The process is canceled.	If the "resp-code" tag has the value "80".
		Response error Error code: 99 (The abnormalities in a server process and an administrator will be contacted.)	This occurs when the response code 99 is received from the server.	The process is canceled.	If the "resp-code" tag has the value "99".
ECU list download		input a model and a machine turn in less than 20 characters.	This occurs when the clear transmission button was pressed without entering the model or Serial No.	The process is canceled.	
		Input type is not the Engine. Enter the model again.	This occurs when the ma- chine model was entered despite the engine being selected on the machine selection screen.	The process is canceled.	
		Input type is not the Agri. Machine. Enter the model again.	This occurs when the engine model was entered despite the engine being selected on the engine and machine selection screen.	The process is canceled.	
ECU write download		Select an item for download.	This occurs when the transmission button was dicked without selecting (ticking) the download Item.	The process is canceled.	
		Enter the serial number.	This occurs when the transmission button is pressed without entering the serial number for ECU exchange (actual ma- chine/desktop) only.	The process is canceled.	
		Reading the download file (ZIP) failed.	This occurs when the ECU software ZIP file does not exist and could not be stored in the specified file.	The process is canceled.	

Download/Upload (ECU software related)

Function	Process	Message (image)	Cause	Operation after display	Remark
Part Re- placement	Pump re- placement	input a model and a machine turn in less than 20 characters.	This occurs when the clear transmission button was pressed without entering the model or Serial No.	The process is canceled.	
		Select an item for download.	This occurs when the transmission button was dicked without selecting (ticking) the download Item.	The process is canceled.	

20. Attached Documents

FMI	Content
0	The data is valid, but exceeds the normal operation range. (Upper limit exceeded)
1	The data is valid, but does not reach the normal operation range. (Lower limit exceeded)
2	The data is unstable, intermittent, and inappropriate. (Intermittent fault)
0	The voltage exceeds the normal operation range or short-circuited on the high-voltage side. (Signal fault
3	upper limit)
4	The voltage does not reach the normal operation range or short-circuited on the low-voltage side. (Signal
4	fault lower limit)
5	The current does not reach the normal operation or the circuit is open. (Electric current fault low)
6	The current does exceeds the normal operation or the circuit is grounded. (Electric current fault high)
7	The machine system is not reacting or misaligned. (Machine system fault)
8	The rotational speed or pulse width/cycle is faulty. (Rotational speed, pulse width fault)
9	The update ratio is faulty. (Smart sensor and actuator fault)
10	The rate of change is faulty. (Rate of change fault)
11	The error code is unknown. (Incorrect sub-system error code)
12	There is a problem in the intelligent device/component. (Intelligent device problem)
13	Unable to calibrate. (Calibration disabled)
14	This is a special command. (Special command)
15	Normal. (Normal)

Attached document: FMI (Failure Mode Identified) list