



YAMAHA DIAGNOSTIC SYSTEM

VERSION 2.00

INSTRUCTION MANUAL

6CL-2819U-10

Preface

This Instruction Manual, written for use by Yamaha outboard motor and watercraft dealers, contains information on using the YAMAHA Diagnostic System software and diagnosing problems in an outboard motor or watercraft.

This manual contains information to be used together with basic servicing procedures, and therefore requires that the person performing these procedures have a basic maintenance knowledge and technical skills of outboard motors or watercraft.

See the applicable outboard motor or watercraft service manual for detailed service and maintenance information.

The information included may be subject to change for improvement.

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**YAMAHA DIAGNOSTIC SYSTEM
VERSION 2.00**

INSTRUCTION MANUAL

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Important Information

Particularly important information is distinguished in this manual by the following notations:

⚠ The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

⚠ WARNING

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

NOTICE

A **NOTICE** indicates special precautions that must be taken to avoid damages to the outboard motor, watercraft, or other property.

TIP:

A **TIP** provides key information to make procedures easier or clearer.



Abbreviation

The following abbreviations are used in this Instruction Manual and on the YAMAHA Diagnostic System screen.

While not included in this table, some names displayed on the YAMAHA Diagnostic System screen have a restriction on the numbers of characters, and are therefore abbreviated.

Abbreviation

Abbreviation	Description
APS	Accelerator Position Sensor
C	Center
ECM	Electronic Control Module
ETV	Electronic Throttle Valve
EX	Exhaust
F	Forward
IDM	Ionic current Detection Module
IN	Intake

Abbreviation	Description
ISC	Idle Speed Control
LPS	Lever Position Sensor
N	Neutral
OCV	Oil Control Valve
P	Port side
PORT	Port side
PTT	Power Trim and Tilt
R	Reverse

Abbreviation	Description
S	Starboard side
SPS	Shift Position Sensor
STBD	Starboard side
TPS	Throttle Position Sensor
VCT	Variable Camshaft Timing
YDIS	YAMAHA Diagnostic System
R/C	Remote Control (Digital Electronic Control)

Product names for each market

The following names are used in each market.

Meter names for each market

	North America	Worldwide
6Y8 Meter	Command Link Multifunction Meter	6Y8 Multifunction Meter
6Y9 Color Gauge	Command Link Plus Multifunction Color Gauge	6Y9 Multifunction Color Gauge
6Y8 Meter system	Command Link	Digital Network (6Y8 Meter)
6Y9 Color Gauge system	Command Link Plus	Digital Network (6Y9 Color Gauge)

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Introduction

The YAMAHA Diagnostic System uses precision fault diagnosis to offer better serviceability at a time when there is increasing demand for service tools for electronically controlled products. It provides quick, reliable, safe, and reasonable service, and is intended to obtain customer satisfaction. The YAMAHA Diagnostic System features updated software and expanded tool functions that allow it to respond to new models and technologies, maintaining compatibility with regulations.

1. Features

YAMAHA Diagnostic System Version 2.00 covers most of the functions of the Version 1 series. (Not interchangeable)

The CAN-Line transmission method has been added to the conventional transmission method (K-Line), and this enables diagnosis of multiple engines. New functions of Input Settings, Logging, and CAN Information have been added.

1-1. Functions by data transmission type

Composition and function-specific characteristics of YAMAHA Diagnostic System Version 2.00 are as per the list below.

Menu				Primary Function	What You Can Do	Transmission Method			Comparison to Version 1.33
Top Menu	Main Menu	2nd-level Menu	3rd-level Menu			CAN-Line		K-Line	
						6Y9 Color Gauge hub	6Y8 Meter hub		
Start	Engine	Diagnosis	Diagnosis	Displays results of current fault diagnosis.	Identify abnormalities.	YES(*1)	—	YES	
			Diagnosis Record	Displays a history of fault diagnosis recorded in the ECM.		YES(*1)	—	YES	
			Engine Record	Displays the engine state recorded in the ECM.	Check the engine trouble history.	YES(*1)	—	YES	
			Engine operating hours by RPM	Displays operating hours by RPM.	Check the history of engine usage.	YES(*1)	—	YES	
		Engine Monitor	Digital Display	Displays ECM data numerically.	Check the current operating state of the engine.	YES(*1)	—	YES	
			Graph Display	Displays ECM data in graph form.		YES(*1)	—	YES	
			Input Setting	Settings to display data from connected external devices on YDIS screen.	View data from external devices on YDIS.	YES	—	YES	New
		Component Test	Stationery Test	Performs an operational test of each component with the engine stopped.	Check functioning of each component.	YES	—	YES	
			Active Test	Performs an operational test of each component with the engine running.		YES	—	YES	

(*1) Items that enable diagnosis for multiple engines.

Menu				Primary Function	What You Can Do	Transmission Method			Comparison to Version 1.33
Top Menu	Main Menu	2nd-level Menu	3rd-level Menu			CAN-Line		K-Line	
						6Y9 Color Gauge hub	6Y8 Meter hub		
Start	Engine	Data Logger	Record Set	Displays a graph of past data recorded in the ECM.	Check the past operating state of the engine.	YES	—	YES	New
			Show Data	Displays a graph of data recorded before and after troubles.		YES	—	YES	
			Logging	Displays a graph of data recorded on the adapter.		YES	—	YES	
	Boat System	Tilt Limiter		Sets the tilt angle when the outboard motor is tilted up.	Configure systems.	YES	—	YES	
		R/C System Reset		Returns connection between the outboard motor and the Digital Electronic Control to default settings.		YES	—	YES	
	Maintenance	Engine oil change record		Records oil change history.	Manage oil change history.	YES	—	YES	
	Update				Update database.	Update database.	YES	—	YES
Setting				Sets the language and units displayed on YDIS screen.	Switch screen displays.	YES	—	YES(*2)	New
Off Line				Displays data saved on the computer, when the ECM is disconnected.	Check data saved on computer without connecting to ECM	YES	—	YES	
CAN Information	Communication List			Displays quality of CAN system device connection and transmission.	Distinguish the type of device connected.	YES	YES	—	New
	Bus Statistics			Displays the transmission load ratio for the CAN system.	Check whether devices are connected correctly.	YES	YES	—	

(*2) When connected via K-Line, you cannot select display units.

1-2. Transmission Method

Two transmission methods have been added to YAMAHA Diagnostic System Version 2.00. The CAN-Line in which the transmission harness is connected to a hub, and the K-Line, in which a transmission harness is connected to the outboard motor, which is the same as in the YAMAHA Diagnostic System Version 1 series.

■ CAN-Line

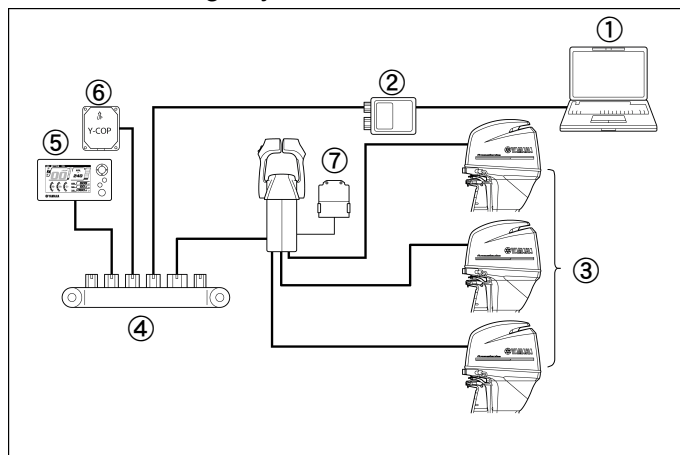
There are two types of CAN-Line, the 6Y9 Color Gauge system, and the 6Y8 Meter system.

By being connected to a computer using a hub, this enables operation of the YAMAHA Diagnostic System from near the driver's seat, preventing moisture damage to the computer and peripherals.

The 6Y9 Color Gauge system enables display of results of diagnosis for multiple engines.

The 6Y8 meter system can use only CAN Information functions.

6Y9 Color Gauge system



- ① Computer
- ② Adapter
- ③ Outboard motor
- ④ Hub
- ⑤ 6Y9 Color Gauge
- ⑥ Y-COP
- ⑦ Digital Electronic Control

YAMAHA Diagnostic System

Main Menu > Engine > Diagnosis > Diagnosis

Item Name	Code	P	C	S
TPS	124	Irregular	Normal	Normal
TPS	128	Irregular	Normal	Normal
Pulser coil	13	Normal	Normal	Normal
Engine temperature sensor	15	Normal	Normal	Normal
Knock sensor	17	Normal	Normal	Normal
Battery voltage	19	Normal	Normal	Normal
Air temperature sensor	23	Normal	Normal	Normal
Cam position sensor (EX)	24	Normal	Normal	Normal
Water in fuel filter	27	Normal	Normal	Normal
Air pressure sensor	29	Normal	Normal	Normal

F1 F2 F3 F4 F5 F6 F7 F8 F9 F10

Save Message Select Eng. Help Enter Back

YAMAHA Diagnostic System

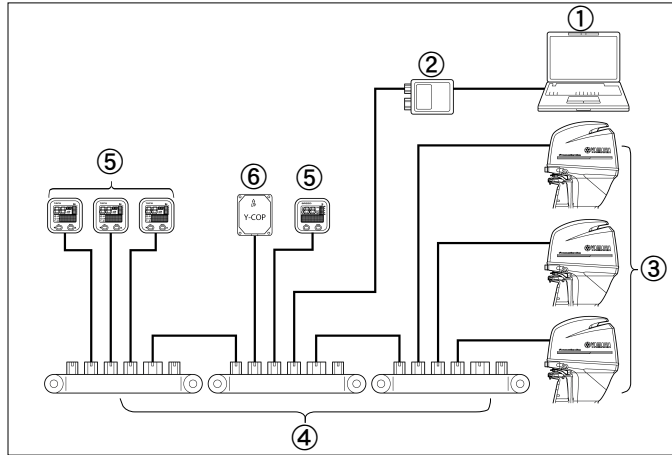
Main Menu > Engine > Eng. Monitor > Digital Disp.

Item Name	Unit	P	C	S
Engine speed	r/min	610	610	610
Intake air pressure	kPa	45.50	46.00	46.00
TPS1	V	0.640	0.650	0.650
Throttle valve opening angle	deg	3.0	3.1	3.2
TPS2	V	2.630	2.640	2.650
Throttle request	%	0.00	0.00	0.00
LPS (main)	V	2.270	-	2.240
LPS (sub)	V	2.190	-	2.110
LPS_PORT (main)	V	-	2.240	-
LPS_PORT (sub)	V	-	2.290	-

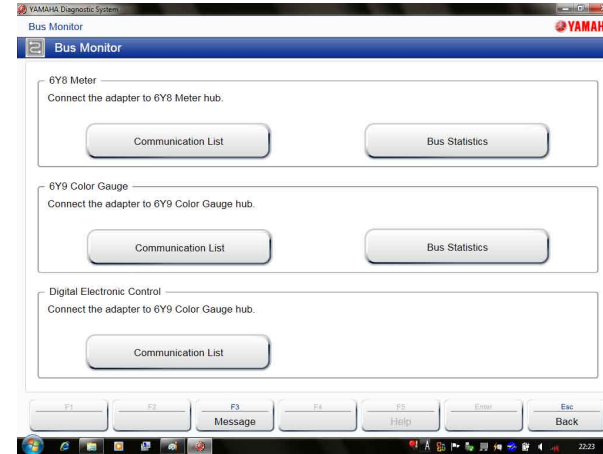
F1 F2 F3 F4 F5 F6 F7 F8 F9 F10

Select Item Save Message Select Eng. Help Enter Back

6Y8 Meter system

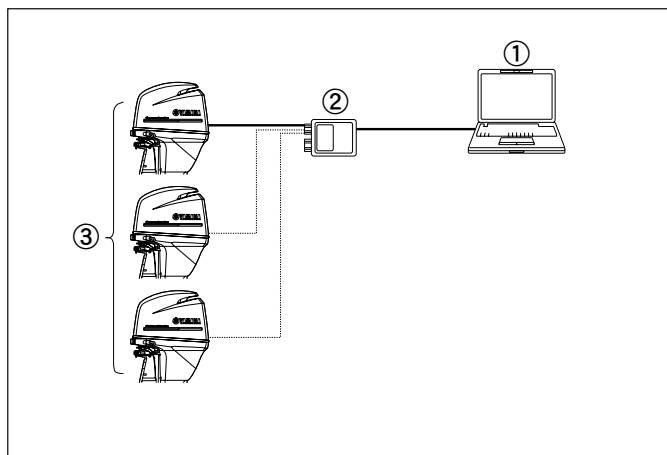


- ① Computer
- ② Adapter
- ③ Outboard motor
- ④ Hub
- ⑤ 6Y8 Meter
- ⑥ Y-COP



■ K-Line

K-Line connections can use functions other than CAN Information and unit selection in the Setting. As previously, this connects the coupler on the outboard motor to the computer, and performs diagnostics for individual engines.



① Computer

③ Outboard motor

② Adapter

1-3. Newly added functions

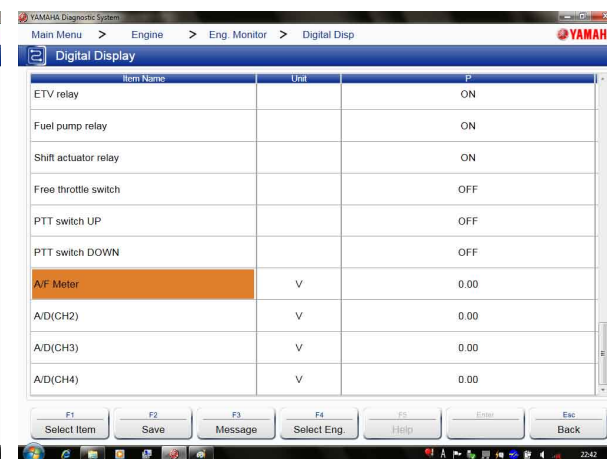
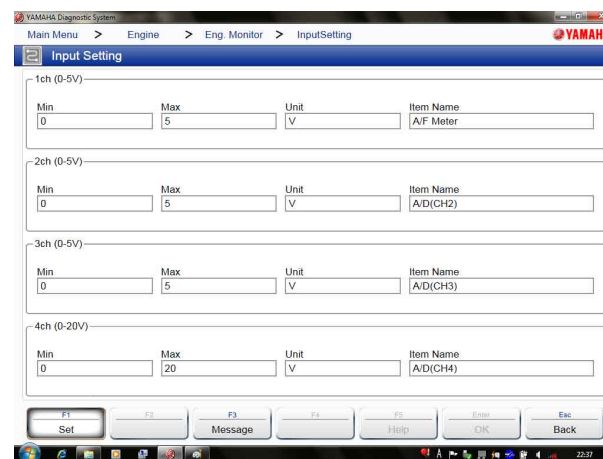
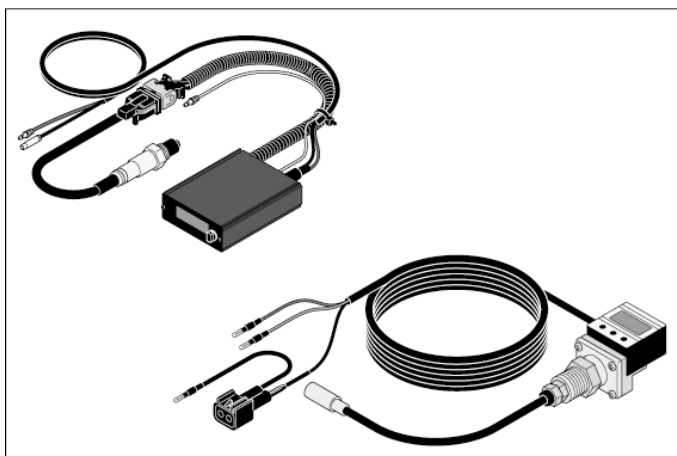
■ Input Setting

Connect external devices such as A/F and fuel pressure sensors, and specify equipment names and units to enable display on the Engine Monitor and logging of these values.

This can convert voltage values input from external devices to arbitrary values, and input these as 4ch. Channels 1–3 support input voltage of 0–5 V, and channel 4 supports input voltage of 0–20 V.

TIP:

Please use commercially-available external devices.



■ Logging

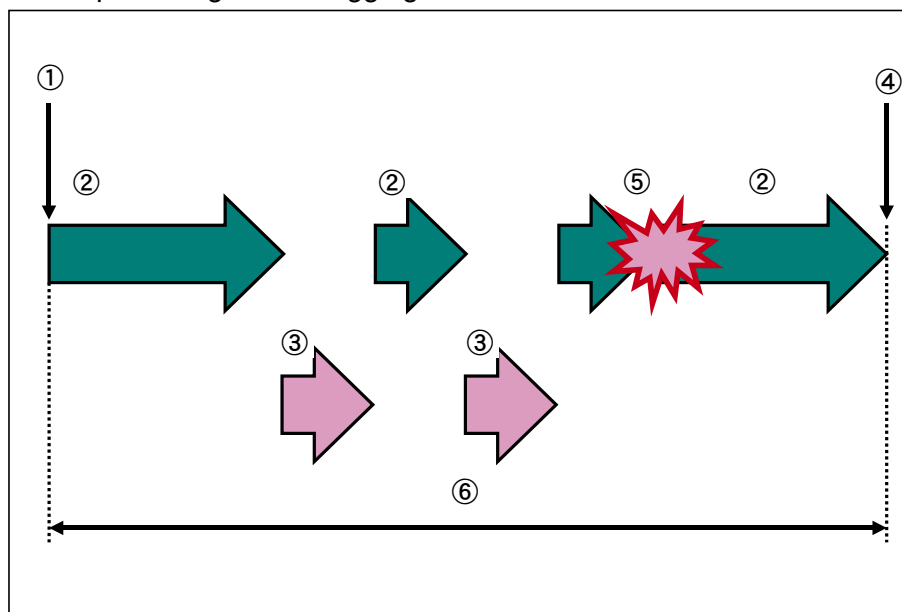
With the YAMAHA Diagnostic System Version 2.00, you can record data in the adapter. After configuring recording properties in the adapter while the computer and engine are connected, removing the USB cable from the adapter records data in the adapter. These data can be displayed in graph form on the YAMAHA Diagnostic System monitor.

With this system, the computer and engine are not connected during logging. Accordingly, because operating conditions can be recorded by placing the adapter inside the cowling, it will be easier to reproduce trouble conditions, and to investigate the causes of any faults.

TIP:

- Removing the USB cable connected to the computer from the adapter starts recording. Connecting the USB cable to the adapter stops recording.
- Recording normal data (while in default condition) enables comparison with fault data, and makes it easier to investigate causes of faults.
- In the future, addition of the function by which logging can be stopped through use of the trigger switch harness and switch extension harness is expected.

Conceptual diagram of Logging



① Disconnect the USB cable from the adapter.

② Recording (engine speed: 500r/min or more)

③ Stop recording (engine speed: less than 500r/min)

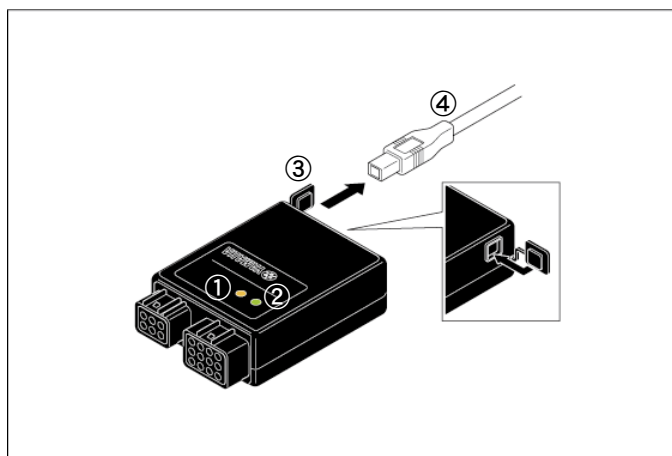
④ Connect the USB cable to the adapter.

⑤ Fault occurs.

⑥ Adapter recording status

TIP:

- The adapter is able to record data in 1.6 MB of memory under preconfigured conditions.
- The green LED on the adapter indicates the power status. The red LED indicates it is recording.
- During operation, the adapter is supplied power from the engine. If the engine is stopped while the adapter is recording, then the rechargeable battery within the adapter will perform a backup. (Guaranteed for 48 hours with the battery charged for an hour)
- If the internal battery becomes depleted, recorded data will be deleted. Accordingly, before this happens save the data or connect the adapter to the engine and recharge the battery.
- During logging, ensure the waterproof cap is on the USB cable port.



① Red LED
② Green LED

③ Waterproof cap
④ USB cable

Introduction

Adapter LED lighting patterns

LED Status		Adapter Status (Normal logging condition)		Description
Green LED	Red LED			
 (OFF)	 (OFF)	Normal	Power OFF	The adapter is not being supplied with power.
 (ON)	 (ON)	Normal	Normal logging not set Data recording completed Connected to computer	If normal logging is not being used, if recording is completed, or if connected to the computer.
 (ON)	 (0.5 sec. ON, 0.5 sec. OFF)	Normal	Recording data	If engine speed is 500 r/min or more, and communication established with the ECM.
 (ON)	 (1 sec. ON, 1 sec. OFF)	Normal	Stopping data recording	If engine speed is less than 500 r/min, and communication established with the ECM.
 (ON)	 (0.05 sec. ON, 0.05 sec. OFF)	Abnormal	Transmission error	If communications cannot be established with the ECM. Cause: The engine power is OFF. The transmission harness or USB cable is disconnected. Connected to a different engine to that set for recording. Recording set to use a K-Line, but a CAN-Line is connected. Recording set to use a CAN-Line, but a K-Line is connected. Response: Check the harness, cables, and other connections.
 (0.05 sec. ON, 0.05 sec. OFF)	 (OFF)	Abnormal	Adapter firmware (internal software) abnormality	Error in updating the adapter firmware (internal software). Cause: Data erased, or a USB cable removed while setting recorded values, etc. Response: Close YAMAHA Diagnostic System, check connections, then restart.

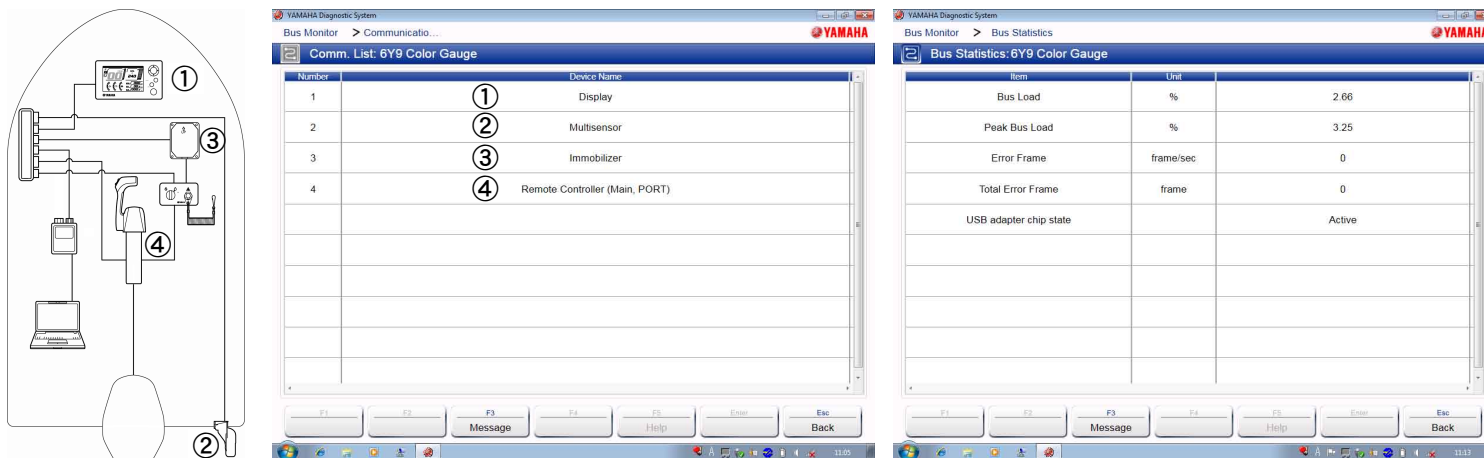
■ CAN Information

CAN Information has two functions; Communication List and Bus Statistics.

With the Communication List, you can know whether or not a device is correctly connected.

If the device is correctly connected, then detailed device information will be displayed.

Bus Statistics displays the status of CAN bus devices correctly connected, and the bus load rates.



The diagram on the left shows a motorcycle's electrical system with a CAN bus. A laptop is connected to the system via a USB adapter. The system includes a display (1), a multisensor (2), an immobilizer (3), and a remote controller (4).

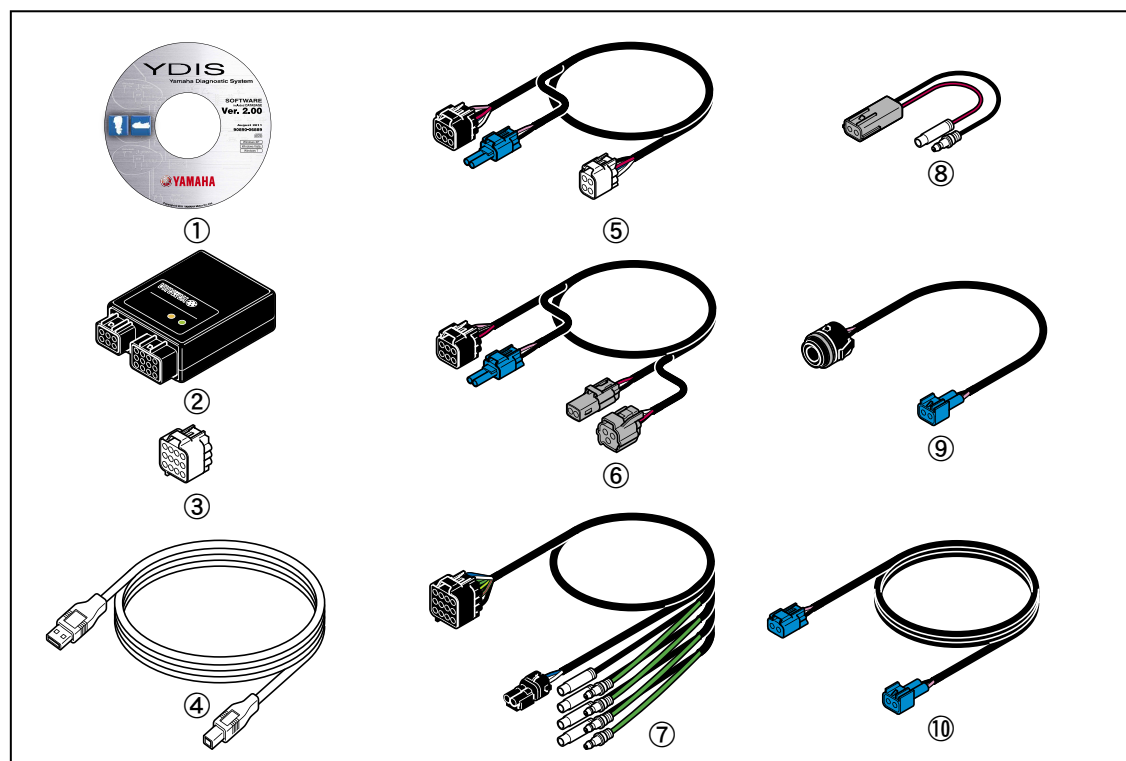
The two screenshots on the right show the Yamaha Diagnostic System software interface. The left screenshot displays the 'Comm. List: 6Y9 Color Gauge' window, which lists the connected devices. The right screenshot displays the 'Bus Statistics: 6Y9 Color Gauge' window, which shows the status of the CAN bus devices and the bus load rates.

Number	Device Name
1	① Display
2	② Multisensor
3	③ Immobilizer
4	④ Remote Controller (Main, PORT)

Item	Unit	Value
Bus Load	%	2.66
Peak Bus Load	%	3.25
Error Frame	frame/sec	0
Total Error Frame	frame	0
USB adapter chip state		Active

2. Compositions of the tool

YAMAHA Diagnostic System Version 2.00 is made up of 10 components.



- | | |
|--|------------------------------------|
| ① CD-ROM (software + Instruction Manual) | ⑥ K-Line harness |
| ② Adapter | ⑦ AD harness (for external input) |
| ③ Adapter cap | ⑧ Power supply harness |
| ④ USB cable(5 m) | ⑨ Trigger switch harness |
| ⑤ CAN-Line harness | ⑩ Trigger switch extension harness |

3. Hardware requirements

It is recommended that the computer upon which this software will be installed meets the following conditions.

PC:

IBM PC/AT compatible PC with a Microsoft Windows Operating System.

Operating system:

Microsoft Windows XP Professional SP3 (32 bit), Windows Vista Business SP2 (32 bit), Windows 7 Professional SP1 (32 bit/64 bit)

CPU:

Windows XP: Pentium, 1 GHz or higher

Windows Vista: Intel processor, 1.6 GHz or higher

Windows 7 (32 bit): 1.6 GHz or higher 32-bit (x 86) processor

Windows 7 (64 bit): 1.6 GHz or higher 64-bit (x 64) processor

Memory:

Windows XP: 512 MB or more

Windows Vista: 1 GB or more

Windows 7 (32 bit): 1 GB or more

Windows 7 (64 bit): 2 GB or more

Hard disk free space:

Windows XP: 1.5 GB or more

Windows Vista: 15 GB or more

Windows 7 (32 bit): 16 GB or more

Windows 7 (64 bit): 20 GB or more

Drive:

CD or DVD-capable drive

Display:

XGA (1024 x 768 pixels) or more, 16.7 million or more colors

Input devices:

Mouse, keyboard, and touch panel that are compatible with the operating systems mentioned above

Communication port:

USB port (USB 2.0 or 1.1)

Printer:

Compatible with the operating systems mentioned above

TIP:

- Operating speed may drop, depending on your computer.
 - The amount of memory and hard disk space may differ depending on your system environment. Using this system when there is little hard disk space available may cause memory shortages and other troubles.
 - Some functions may not operate correctly even when used on computers using one of the compatible operating systems due to limitations applied by a computer manufacturer.
 - Use a small font as a system font.
 - Before starting YAMAHA Diagnostic System every first time after turning on the computer, quit any other applications that are running.
 - Do not use the screen saver, power saving, or stand-by function.
Communication may be cut off and YAMAHA Diagnostic System reset may be required.
 - Only one device (one computer to one adapter) can be tested, even when multiple adapters are connected to multiple USB ports on the computer.
 - Be sure to end this program if the login user is changed.
 - Do not use a USB hub.
 - Starting this software base may cause the adapter firmware to update.
 - Do not change the screen size when using this software.
-

4. Compatible models

This software is compatible with the following models:

North American models

Engine type		Model name	Model year	Model group (*1)
HPDI	2596 cm ³	(L)Z150, VZ150, Z175, VZ175, (L)Z200		A
HPDI	3342 cm ³	VZ200, VZ225, (L)Z250, VZ250, (L)Z300, VZ300		B
L3	747 cm ³	F40 (EFI models)		C
L4	1741 cm ³	(L)F115	–'00	D
			'01–	E
L4	1596 cm ³	F75, F90		E
L4	996 cm ³	F50, T50, F60, T60, F70		
L4	2670 cm ³	(L)F150A		F
V6	3352 cm ³	(L)F200, (L)F225		G
		(L)F200, F225TLR, (L)F250 (ETV models)		H
		(L)F250B (Digital Electronic Control)		I
V6 Bass	4169 cm ³	VF200, VF225, VF250		J
V6	4169 cm ³	(L)F225, (L)F250, (L)F300		K
V8	5330 cm ³	(L)F300, (L)F350	'08–'10MY	L
			'11MY	M

(*1) For details of each model group, see “[Functions by model \(Outboard motor\)](#)”

Worldwide models

Engine type		Model name	Model year	Model group (*1)
HPDI	2596 cm ³	(L)Z150P, Z150Q, Z175G, Z175H, (L)Z200N, Z200P, Z200Q		A
HPDI	3342 cm ³	Z200R, Z225H, Z240A, Z240B, (L)Z250D, Z250F, (L)Z300A, Z300B		B
L3	747 cm ³	F30B, F40F		C
		F40D, F40G		E
L4	1741 cm ³	F(L)115A	–'00	D
			'01–	E
L4	1596 cm ³	F75B, F75C, F80B, F80C, F90B, F100D		E
L4	996 cm ³	F50F, FT50G, F60C, FT60D, F70A		
L4	2670 cm ³	F(L)150A , F(L)150B		F
V6	3352 cm ³	F(L)200A, F(L)200B, F(L)225A		G
		F(L)200C, F(L)225B, F225C, F(L)250A, F(L)250G		H
		F(L)250B		I
V6 Bass	4169 cm ³	F200D, F225D, F225G, F250C, F250F, F275A		J
V6	4169 cm ³	F(L)225F, F(L)250D, F(L)300B		K
V8	5330 cm ³	F(L)300A, F(L)350	'08–'10MY	L
			'11MY	M

(*1) For details of each model group, see “[Functions by model \(Outboard motor\)](#)”

TIP: _____

Previously sold models that are compatible with the YAMAHA Diagnostic System can also be used with Version 2.00.

5. Languages

This software supports the following languages:

English, French, Spanish, and Japanese

TIP: _____

Blank spaces are left so that other languages can be added as it becomes necessary in the future.

Installation

This section provides information on installing the YAMAHA Diagnostic System on your computer.

This explanation assumes that you are installing in a Windows 7 environment. Where necessary, screenshots from Windows XP or Windows Vista will be used.

1. Before installation

To use the YAMAHA Diagnostic System, the required component and device drivers must be installed at the same time as the Diagnostic System.

These will be installed automatically by the installer. Required components: [. NET Framework 3.5 SP1] or later, [Windows Installer3.1] or later.

The required components are pre-installed in Windows 7.

Before installing the YAMAHA Diagnostic System, make sure that your computer meets the specified requirements.

For detailed information on the system requirements, see “[Hardware requirements](#).”

Start installation without the adapter connected to the computer, and then connect the adapter to the computer when installing the device drivers.

TIP:

It is strongly recommended that you quit all other programs before running the installer.

2. Installing the YAMAHA Diagnostic System

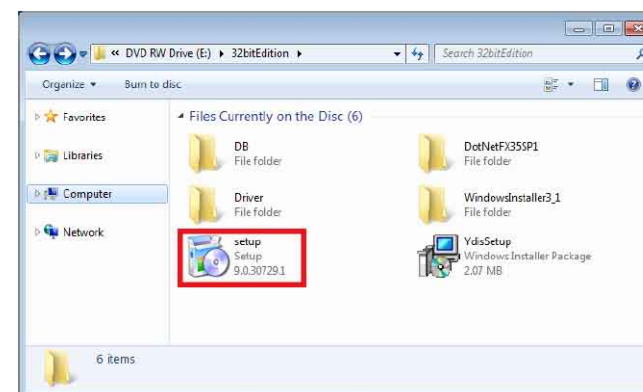
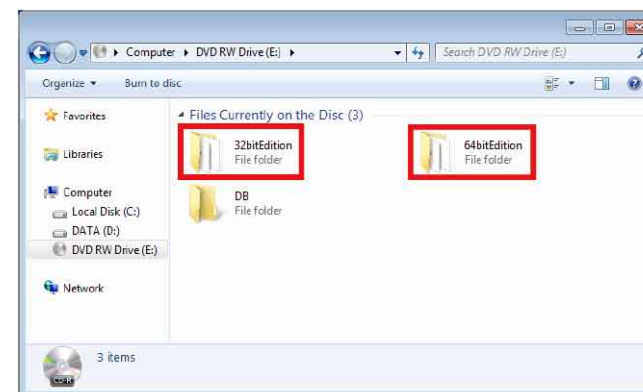
Install in the following order: Install required components → Install YAMAHA Diagnostic System

→ Install device drivers

For Windows 7, the required components are already installed, so begin by installing the YAMAHA Diagnostic System.

- 1.** Turn on your computer.
- 2.** Insert the YAMAHA Diagnostic System CD-ROM into the CD-ROM drive of the computer.
- 3.** Double-click the Computer (My Computer) icon, and then the CD-ROM drive icon to start up the installer.
- 4.** If installing on a 32-bit OS, double-click the folder labeled [32bitEdition].
If installing on a 64-bit OS, double-click the folder labeled [64bitEdition].

- 5.** Double-click the [setup] icon.



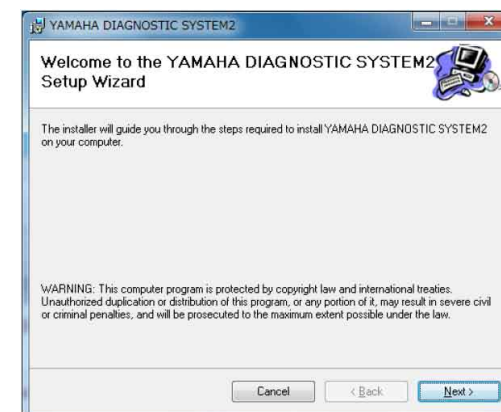
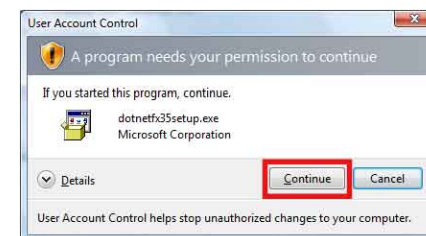
6. The installer will automatically install the required components if they are not installed. If these components are already installed, proceed to step 8.

7. The **License agreement** screen will appear. If you accept the terms of the agreement, click [Accept] to continue.

TIP:

- If a dialog box prompting you to restart the computer appears, click [Yes] to restart the computer.
- If you are using Windows Vista and the **User Account Control** dialog box appears, click [Continue] to continue.
- In the following cases, an error message will appear and the installation will be canceled.
 - When attempting to install the 32-bit version on a 64-bit version of Windows 7.
 - When attempting to install the 64-bit version on a 32-bit version of Windows XP, Windows Vista, or Windows 7.

8. The **YAMAHA DIAGNOSTIC SYSTEM2 Setup Wizard** appears. Click [Next] to continue.



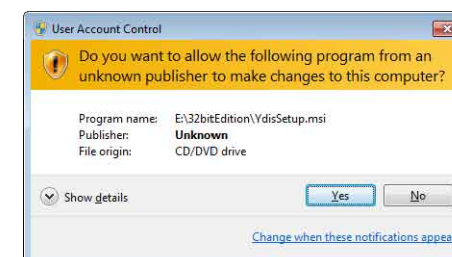
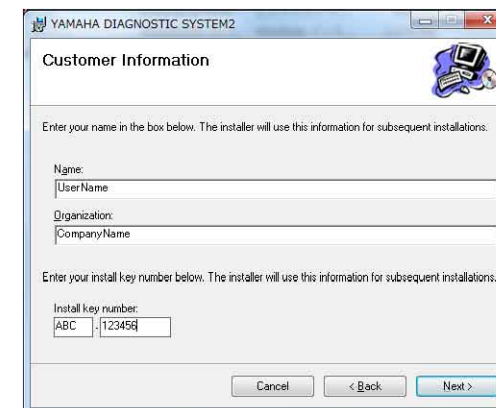
- 9.** The **Customer Information** window appears. Enter the Name, Organization, and Install key number, and then click [Next].

TIP: _____

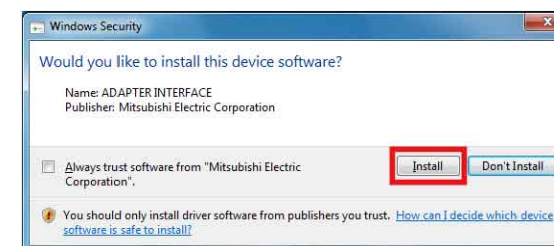
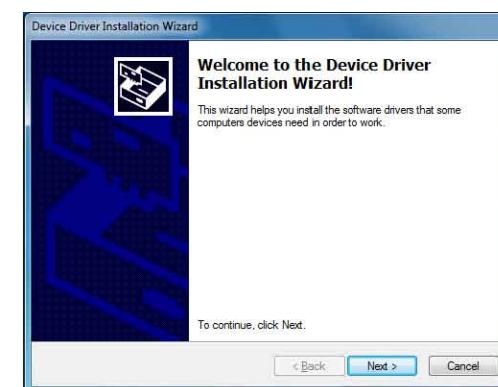
- Entering the wrong Install key number will cause an error message to appear and cancel the installation.
- The Install key number is printed on the back page of the CD-ROM booklet.

- 10.** The **Confirm Installation** window appears. Click [Next] to start the installation process.

- 11.** If you are using Windows Vista or Windows 7 and the **User Account Control** dialog box appears, click [Yes] to continue.



- 12.** After the installation is completed, the **Installation Complete** dialog box appears. Click [Close] to quit the installation program.
- 13.** The installer will automatically detect if device driver installation is required. If you need to install the device driver, the **Device Driver Installation Wizard** will appear. Click [Next] to continue.
- 14.** The installation confirmation dialog box appears. Click [Install] to start the driver installation.



TIP: _____

If you are using Windows XP, click [Continue Anyway].

- 15.** The **Completing the Device Driver Installation Wizard** appears. Click [Finish] to close the wizard.

TIP: _____

The installation has not been completed yet.

- 16.** Connect the adapter to the computer using the USB cable. For connection procedures, see “[Connecting the computer to the outboard motor.](#)”

- 17.** For Windows Vista or Windows 7, the device driver will be installed automatically. Once the device driver installation has been completed, you will see a message on the Windows task bar.

TIP: _____

For Windows Vista or Windows 7, the YAMAHA Diagnostic System installation has been completed.

Windows XP



18. For Windows XP, the **Found New Hardware Wizard** appears. Select “No, not this time” and click [Next] to continue.



19. Select “Install the software automatically [Recommended]” and click [Next].



20. The installation confirmation dialog box appears. Click [Continue Anyway] to continue.



21. Once the installation has been completed, the **Completing the Found New Hardware Wizard** dialog box appears. Click [Finish] to close the wizard.

TIP: _____

Make sure to use the same USB port as the one used during the device driver installation. Otherwise, the USB port will not recognize the YAMAHA Diagnostic System.



Connecting the computer to the outboard motor

Connect the computer to the hub or outboard motor.

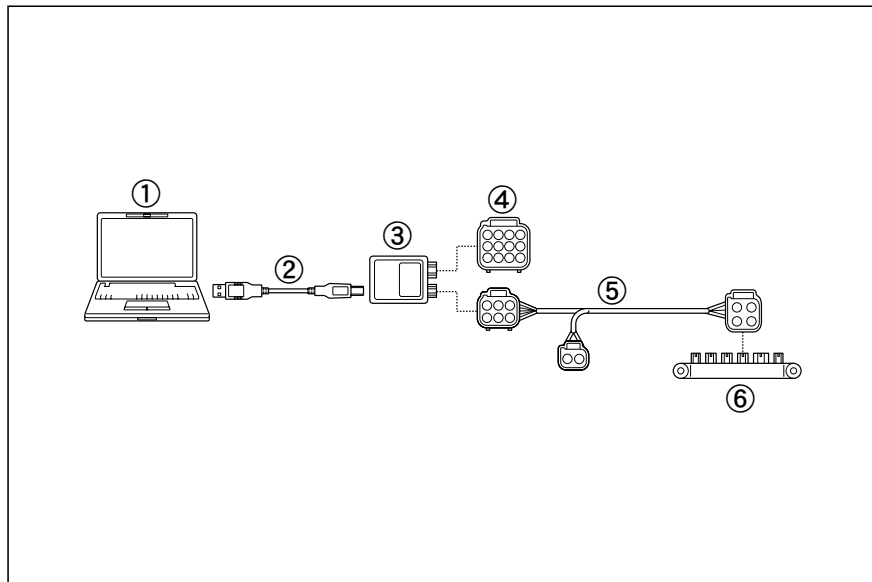
TIP:

- Before starting the YAMAHA Diagnostic System every first time after turning on the computer, quit any other applications that are running.
- When connecting, ensure you use the included cables or harness.
- When connecting via K-Line, see the corresponding service manual for information on how to connect.
- When you finish all YDIS operations, remove the adapter harness plug from the hub (CAN-Line) or engine connector (K-Line) and reinstall the protective cap.
- If using the adapter, make sure that you have installed the device driver.
- Check that all electrical connections are secure and free from corrosion, and that the battery is fully charged.
- When not connecting an AD harness (for external input) to the adapter, then replace the adapter cap to prevent water from entering.

1. Basic connections

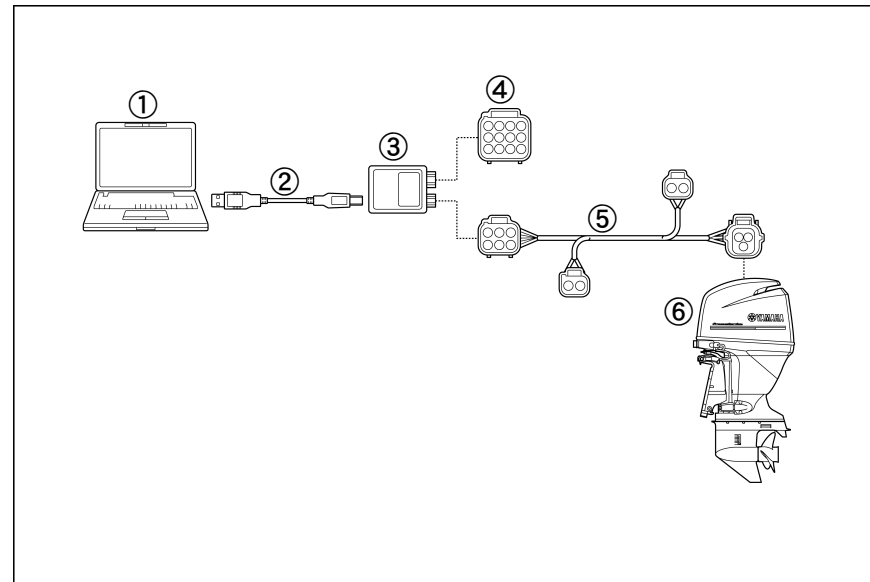
1. Connect the adapter to your computer using the included USB cable.
2. When connecting via CAN-Line, connect the adapter to the hub using a CAN-Line harness. When connecting via K-Line, connect the adapter to the outboard motor using a K-Line harness.

CAN-Line



- | | |
|-------------|--------------------|
| ① Computer | ④ Adapter cap |
| ② USB cable | ⑤ CAN-Line harness |
| ③ Adapter | ⑥ Hub |

K-Line



- | | |
|-------------|------------------|
| ① Computer | ④ Adapter cap |
| ② USB cable | ⑤ K-Line harness |
| ③ Adapter | ⑥ Outboard motor |

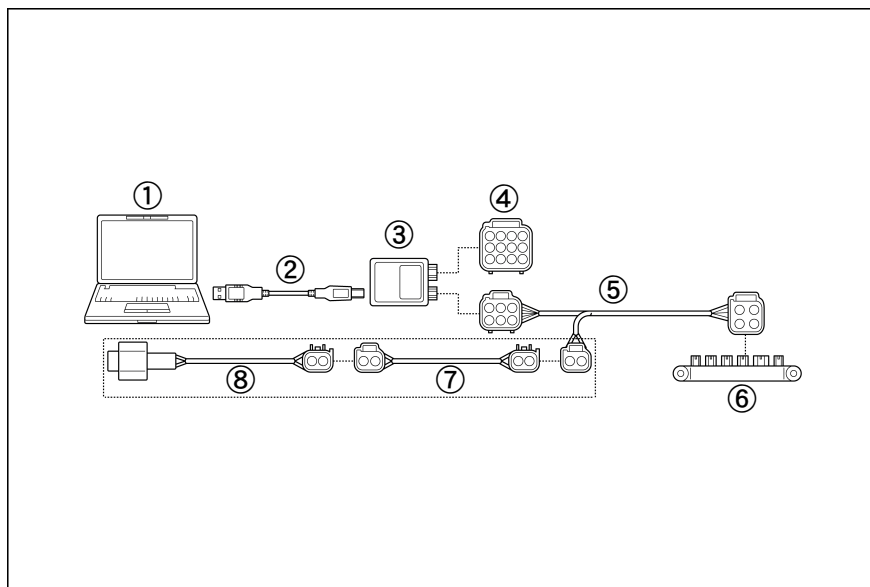
2. When logging

1. Connect the adapter to your computer using the included USB cable.
2. When connecting via CAN-Line, connect the adapter to the hub using a CAN-Line harness. When connecting via K-Line, connect the adapter to the outboard motor using a K-Line harness.

TIP:

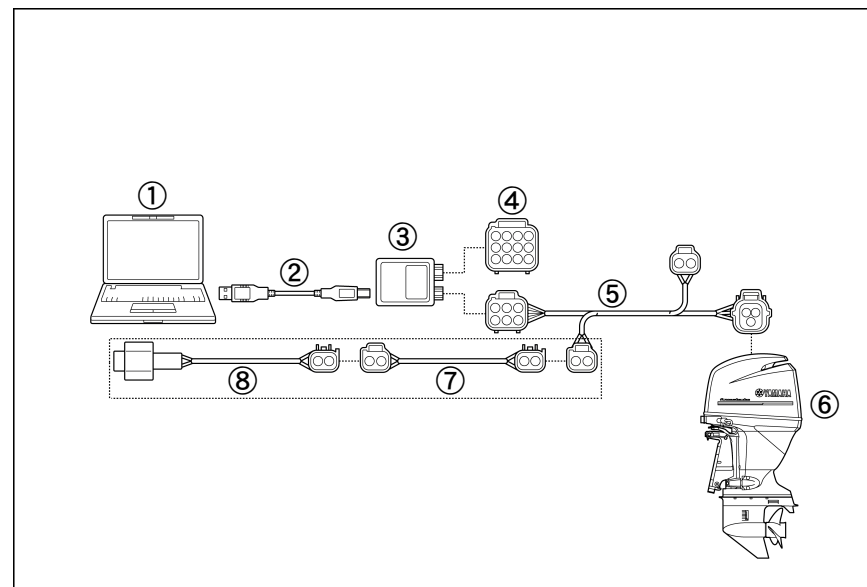
Use of the trigger switch harness and the trigger switch extension harness will be possible when the function to stop logging is added.

CAN-Line



- | | |
|---------------|------------------------------------|
| ① Computer | ⑤ CAN-Line harness |
| ② USB cable | ⑥ Hub |
| ③ Adapter | ⑦ Trigger switch harness |
| ④ Adapter cap | ⑧ Trigger switch extension harness |

K-Line

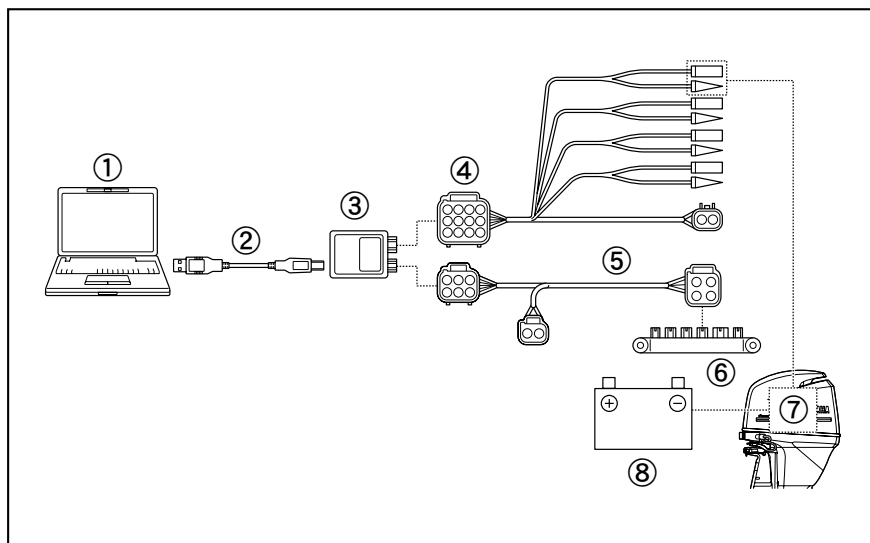


- | | |
|---------------|------------------------------------|
| ① Computer | ⑤ K-Line harness |
| ② USB cable | ⑥ Outboard motor |
| ③ Adapter | ⑦ Trigger switch extension harness |
| ④ Adapter cap | ⑧ Trigger switch harness |

3. When viewing input values using external devices

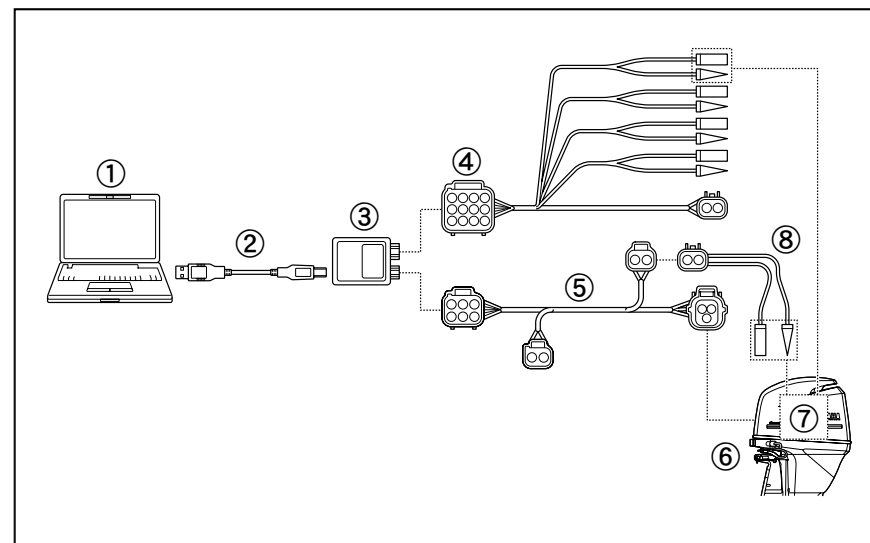
1. Connect the external device to the outboard motor.
2. Connect the adapter to your computer using the included USB cable.
3. When connecting via CAN-Line, connect the adapter to the hub using a CAN-Line harness. When connecting via K-Line, connect the adapter to the outboard motor using a K-Line harness.
4. Connect the adapter to the AD harness.
5. Connect the external device to the AD harness.
6. If CAN-Line, connect the external device to a 12 V power supply, and if K-Line, connect the external device to the K-Line harness using the power supply harness.

CAN-Line



- | | |
|--------------|--------------------|
| ① Computer | ⑤ CAN-Line harness |
| ② USB cable | ⑥ Hub |
| ③ Adapter | ⑦ External device |
| ④ AD harness | ⑧ Battery |

K-Line

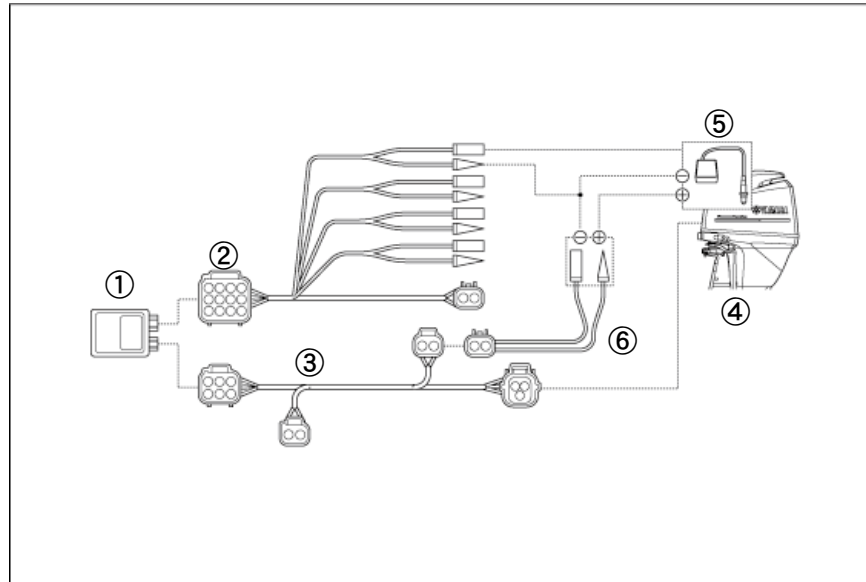


- | | |
|--------------|------------------------|
| ① Computer | ⑤ K-Line harness |
| ② USB cable | ⑥ Outboard motor |
| ③ Adapter | ⑦ External device |
| ④ AD harness | ⑧ Power supply harness |

Connecting the computer to the outboard motor

TIP:

This shows connection examples for devices such as A/F and fuel pressure sensors.



- | | |
|------------------|------------------------|
| ① Adapter | ④ Outboard motor |
| ② AD harness | ⑤ External device |
| ③ K-Line harness | ⑥ Power supply harness |

Starting the YAMAHA Diagnostic System

1. Turn the engine start switch to ON.
2. Turn on your computer.
3. Click the [Start] button on the Windows task bar, point to **Programs** or **All Programs**, and then click **YAMAHA DIAGNOSTIC SYSTEM2**.
4. The **YAMAHA Diagnostic System** top screen is displayed.
5. Click the outboard motor icon or press the [Enter] key on your keyboard.
6. The **Top Menu** screen is displayed.



Quitting the YAMAHA Diagnostic System

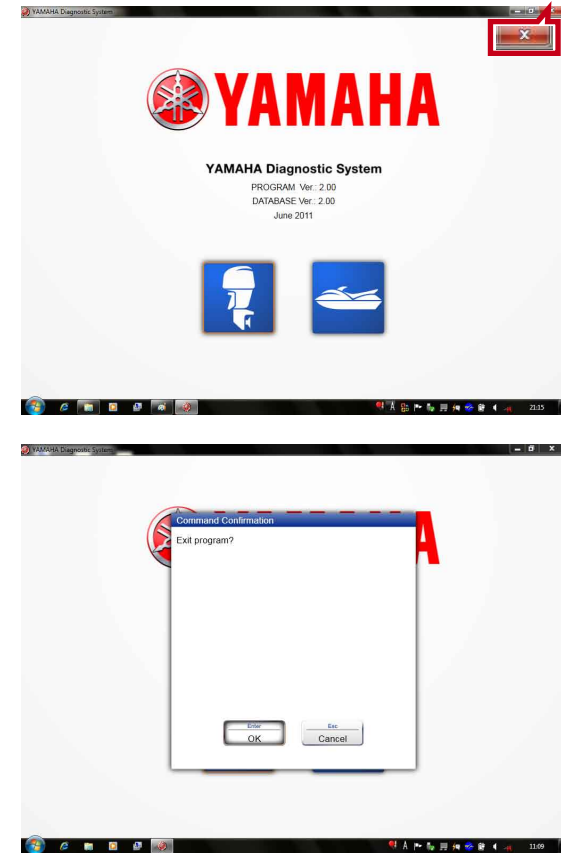
1. Click the [x] button.

2. A confirmation message appears.

3. Click the [OK] button or press the [Enter] key on your keyboard.

TIP: _____

Click the [Cancel] button or press the [Esc] key on your keyboard to cancel the quit command.

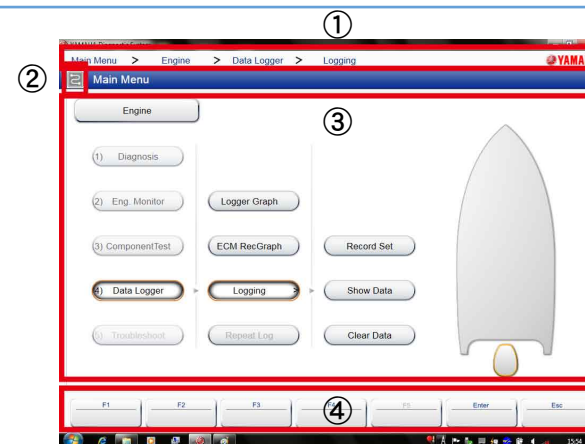


Screen specifications

This explains YAMAHA Diagnostic System screen specifications.

1. Standard screen

This comprises four areas; the title area, the status area, the main area, and the button area.

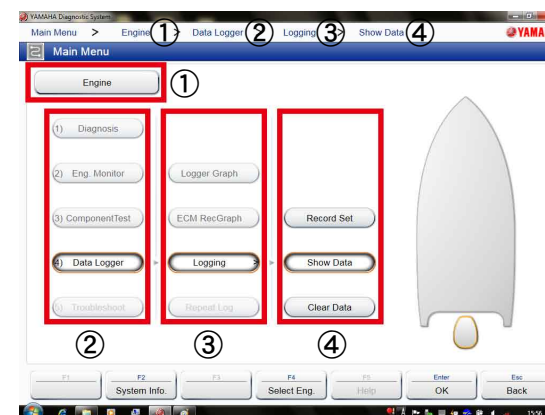


- ① Title area
- ② Status area
- ③ Main area
- ④ Button area

1-1. Title area

This shows the current structure.

From left, these are Main menu → 1st-level menu → 2nd-level menu → 3rd-level menu → 4th-level menu.



- ① 1st-level menu
- ② 2nd-level menu
- ③ 3rd-level menu
- ④ 4th-level menu

1-2. Status area

This shows the communications status between the YAMAHA Diagnostic System and the outboard motor.



- ① Offline: The icon is gray.
- ② Communicating: The icon is blue, with a turning white border.
- ③ Communications error: The icon is blue, overlaid by a flashing red x.

1-3. Main area

Each of these functions displays menu structure, buttons, keys, parameter values, and messages.

Select the buttons in the main area by either clicking a button or pressing arrow keys on your keyboard. Click the [OK] button or press the [Enter] key on your keyboard to confirm.



- ① Button not selected: embossed blue border
- ② Button selected: embossed orange border
- ③ Command has been executed: engraved orange border

1-4. Button area

This has seven buttons, and these are assigned from the left to F1–F5 on the computer keyboard.

Either click these, or use the assigned function keys on the computer keyboard to operate.



2. Sub screen

This displays confirmation of operations, designations of actions, and error messages within the Main screen area.

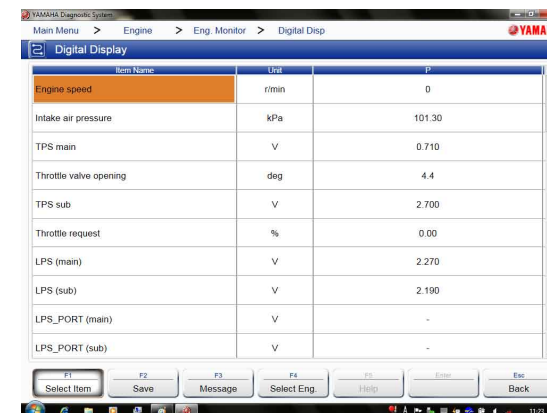


Common operations

1. Selecting the display items

You can select display items or change the display order on the digital and graph displays.

1. Display the **Digital Display** screen or **Graph Display** screen.
2. Click the [Select Item] button or press the [F1] key on your keyboard.



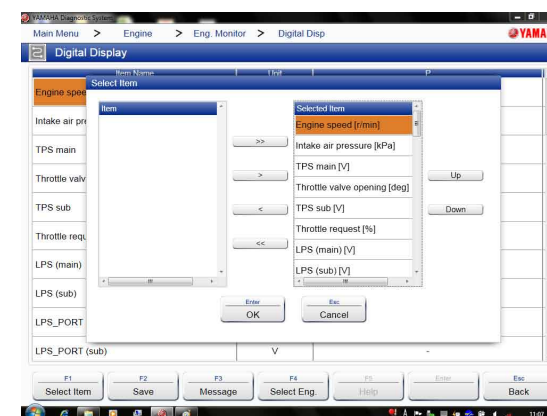
1-1. Display items

You can hide the items that you do not wish to display on the Engine Monitor screen.

1. The **Select Item** window appears.
2. Select an item that you do not wish to display by either clicking it or pressing the up or down arrow keys on your keyboard.

TIP:

At initialization, all items are displayed.



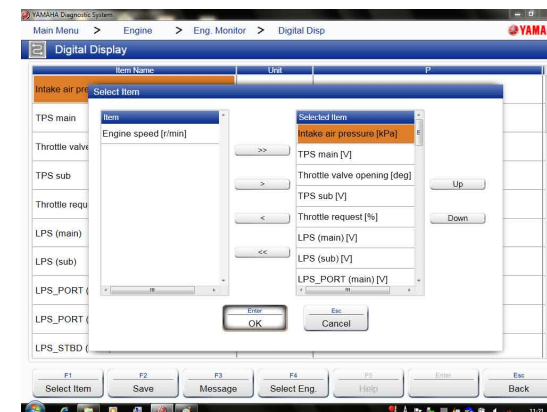
3. Press the space bar to change displayed items to undisplayed items.

4. Click the [OK] button or press the [Enter] key on your keyboard.

TIP:

- Click the [>] button or press the space bar to change undisplayed items to displayed items again.
- The item added to the displayed items will appear at the bottom of the list.
- Click the [<<] button to move all displayed items to undisplayed items.
- Click the [>>] button to move all undisplayed items to displayed items.
- Click the [Cancel] button or press the [Esc] key on your keyboard to cancel the selection.

5. The item is not displayed on the screen.



Item Name	Unit	P
Intake air pressure	kPa	101.30
TPS main	V	0.710
Throttle valve opening	deg	4.5
TPS sub	V	2.700
Throttle request	%	0.00
LPS (main)	V	2.850
LPS (sub)	V	2.770
LPS_PORT (main)	V	-
LPS_PORT (sub)	V	-
LPS_STBD (main)	V	-

1-2. Display order

You can change the display order of the items.

1. Display the **Select Item** window.

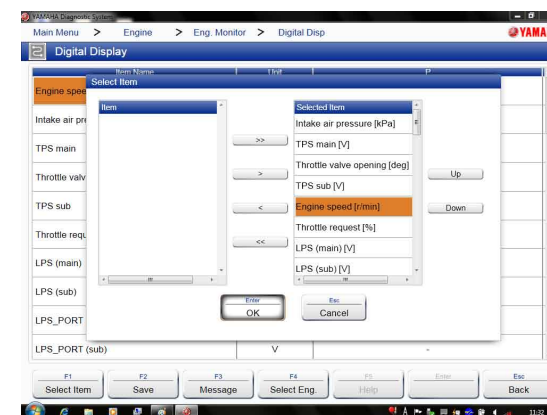
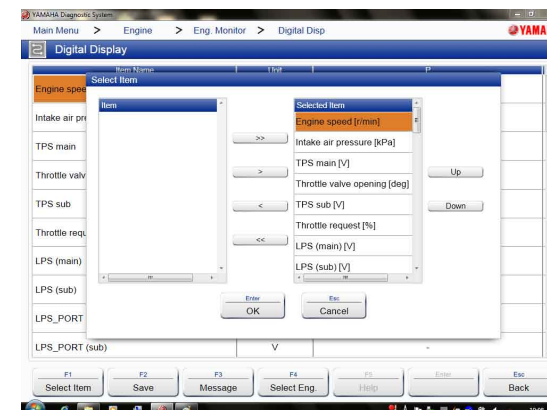
2. Select an item for which you wish to change the display order by either clicking it or pressing the up or down arrow keys on your keyboard.

3. Click the [Down] button to move the selected item downward, and click the [Up] button to move upward.

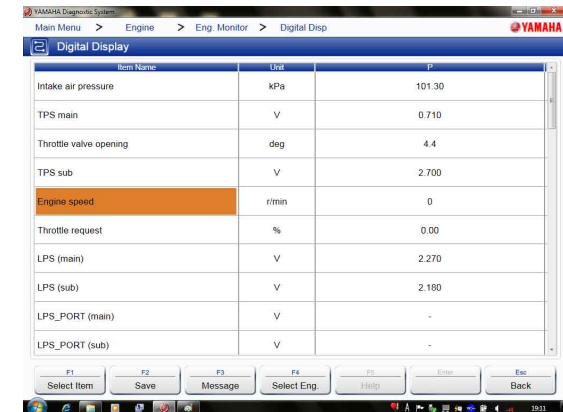
4. Click the [OK] button or press the [Enter] key on your keyboard.

TIP:

Click the [Cancel] button or press the [Esc] key on your keyboard to return to the previous state.



5. The display order of the items on the screen has been changed.

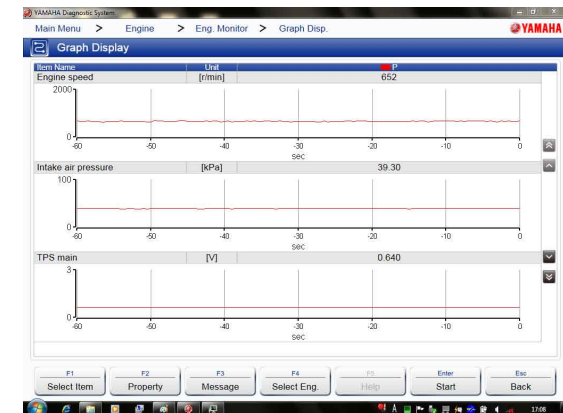


Item Name	Unit	Value
Intake air pressure	kPa	101.30
TPS main	V	0.710
Throttle valve opening	deg	4.4
TPS sub	V	2.700
Engine speed	r/min	0
Throttle request	%	0.00
LPS (main)	V	2.270
LPS (sub)	V	2.180
LPS_PORT (main)	V	-
LPS_PORT (sub)	V	-

2. Setting the graph properties

You can change the value and color for the graph displayed on the Graph Display.

1. Display the **Graph Display** screen.
2. Click the [Property] button or press the [F2] key on your keyboard.



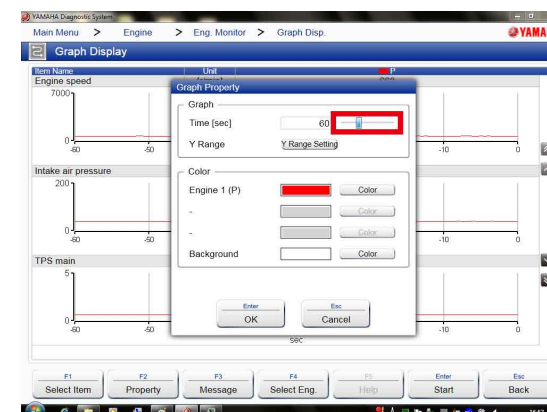
2-1. Display range

You can change the display range for the X and Y axis.

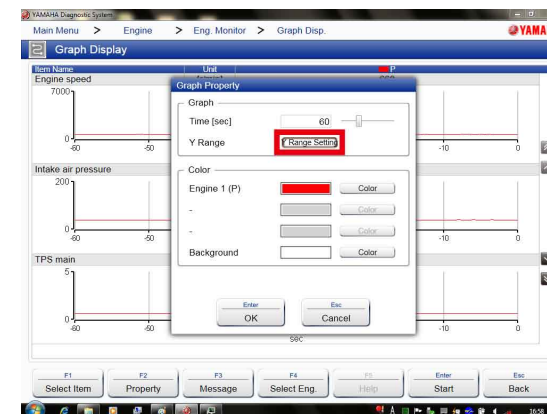
1. Display the **Graph Property** window.
2. Set the width for the X axis using the slider in the **Graph Property** window.

TIP:

Select from 4 widths: 10 sec, 60 sec, 300 sec, 600 sec



3. Click the [Y Range Setting] button in the Graph Property window.



4. The **Graph Range** window appears.
5. Select the item that you wish to change the Y axis width setting for by either clicking it or pressing the up or down arrow keys on your keyboard, and then press the space bar.
6. Enter the minimum and maximum values of the selected item into the text boxes.
7. Click the [Set] button to reflect the changes.
8. Click the [OK] button or press the [Enter] key on your keyboard.

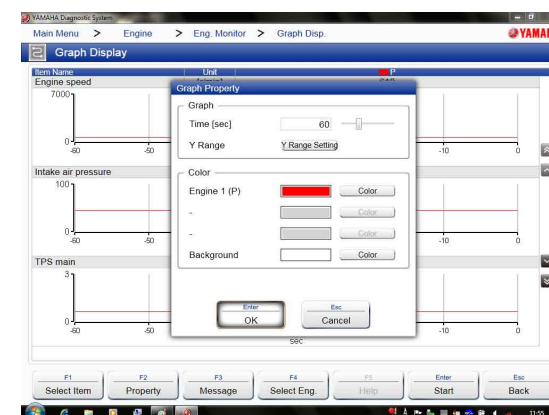
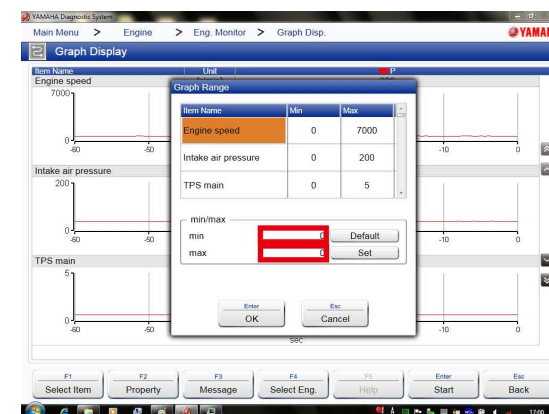
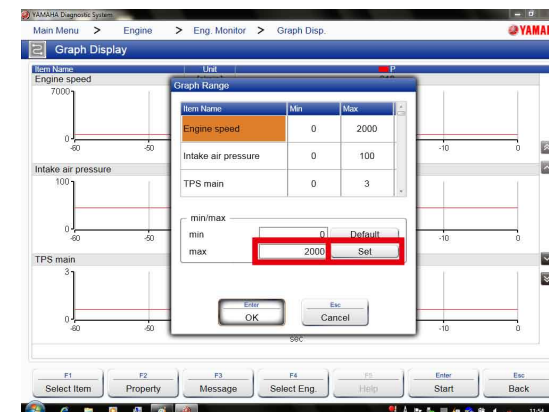
TIP:

- If the entered values are out of the setting range, the borders of the text boxes turn red.
- Click the [Default] button to return the setting value of the selected item to the default value.

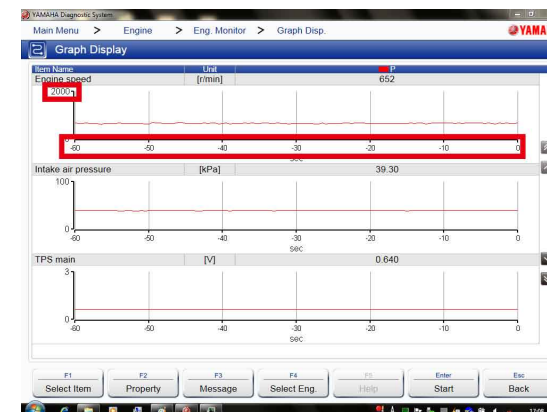
9. Click the [OK] button or press the [Enter] key on your keyboard.

TIP:

Click the [Cancel] button or press the [Esc] key on your keyboard to restore all default settings.



10. The setting values of the X and Y axis have been changed.



2-2. Display colors

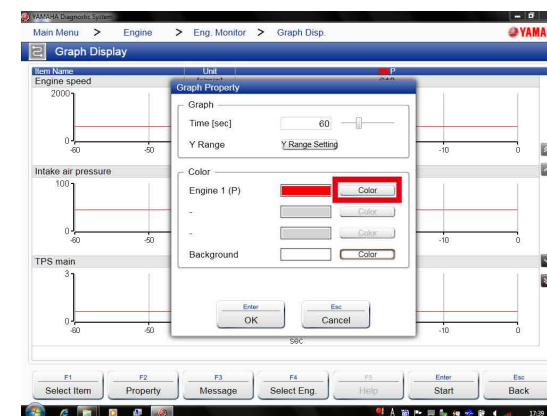
You can change the line color and background color of the graph.

1. Display the **Graph Property** window.

2. Click the [Color] button for line color in the Color group.

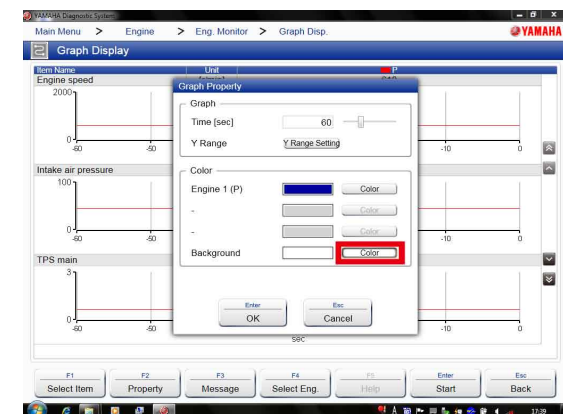
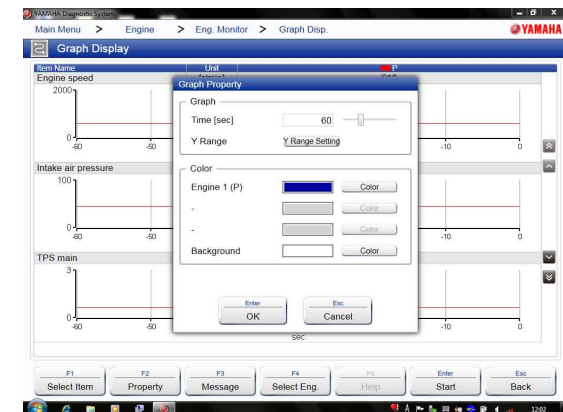
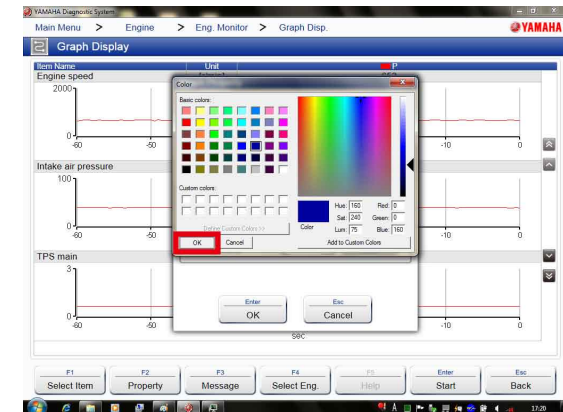
TIP: _____

You can set a different line color for each outboard motor when multiple outboard motors are used.



Common operations

3. The **Color** selection window appears.
4. Select a color and click the [OK] button.
5. The color of the box in the left of the [Color] button changes.
6. Click the [Color] button for the Background in the Color group.



Common operations

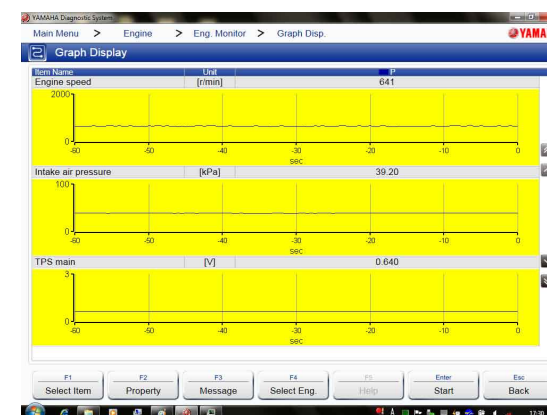
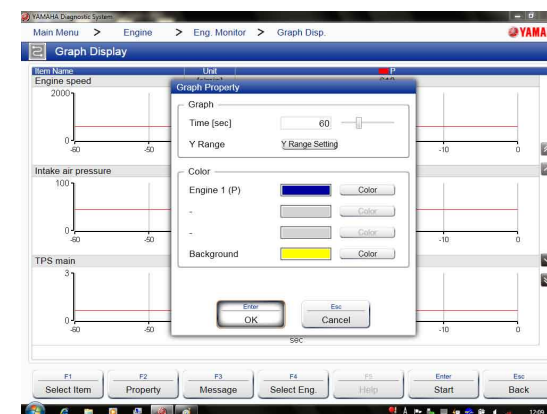
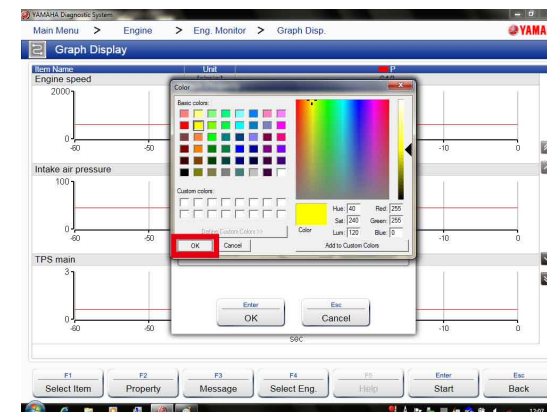
7. The **Color** selection window appears.
8. Select a color and click the [OK] button.

9. The color of the box to the left of the [Color] button changes.
10. Click the [OK] button or press the [Enter] key on your keyboard.

TIP:

Click [Cancel] button or press the [Esc] key on your keyboard to restore all default settings.

11. The line color and background color in the graph on the screen have been changed.



3. Saving data

3-1. Data save

By selecting the Save command in the Diagnosis, Engine Monitor, Data Logger, or Oil Change Record function, the corresponding data can be saved on a disk.

1. Click the [Save] button or press the [F2] key on your keyboard.

2. The **Save File** window is displayed.

3. Select the disk and folder where the data will be saved and assign a file name.

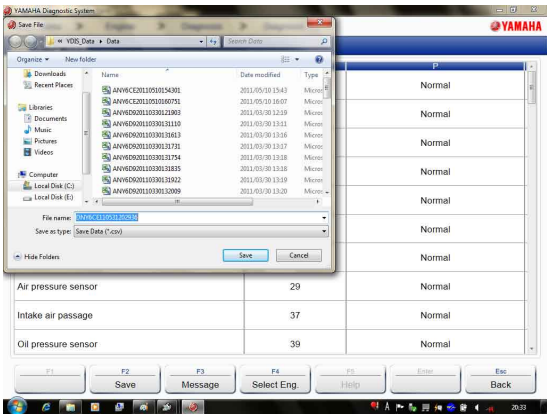
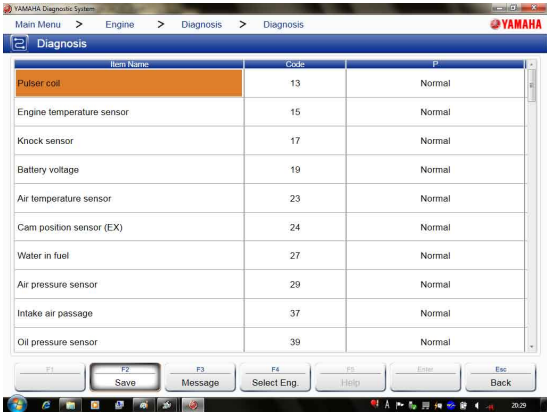
4. Click the [Save] button or press the [Enter] key on your keyboard to save data.

Saved file	DNY	+	First 3 letters of the ECM number	+	Year, month, day, hour, minute, second	+	.csv .xls (*1)
Engine Monitor file	LNY						
ECM record graph file	RNY						
Logging file	ANY						

(*1) Except ECM record graph file.

TIP: _____

The default file name is assigned as in the list above.



3-2. Data export

The data you saved can be viewed in Microsoft Excel.

TIP:

- If Microsoft Office is not installed on your computer: The program saves the data in CSV format.
- If Microsoft Office is installed on your computer: The program saves the data in both CSV format and Excel format. If Microsoft Excel (version 2003 or later) is installed on your computer, you can save the data onto a one-page US Letter-size form as shown in the screen capture on the right.
- Files in csv format are used for graph display. Use Notepad to open these files.
- Do not change the CSV data. Otherwise, it cannot be read by the system.

Save data as Excel

The screenshot shows a Microsoft Excel spreadsheet titled "YAMAHA DIAGNOSTIC SYSTEM". The spreadsheet contains a form with various fields for diagnostic data. The fields are organized into sections: General Information, Diagnostic Data, and a table for Diagnostic Results.

YAMAHA DIAGNOSTIC SYSTEM	
Save date & Time	At 19:44 On June 09 2011
Customer Name	
Dealer Name	
Application Version	2.00
Database Version	2.00
Number of Engines	1
Protocol	2
Model Name	PCBT CENTER STBD
Engine Serial No. (P.I.D.#)	
ECM No.	HCER091A00
1. Diagnosis	
Item	PCBT CENTER STBD Code
Pulse coil	Normal P3
Engine temperature sensor	Normal P5
Knock sensor	Normal P7
Blowby valve	Normal P9
Air temperature sensor	Normal P2
Cam position sensor (ECV)	Normal P4
Water level	Normal P6

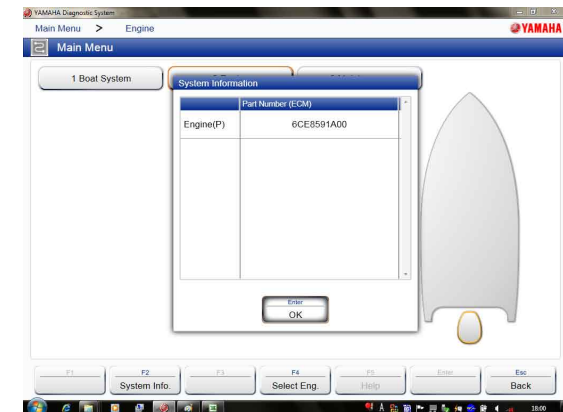
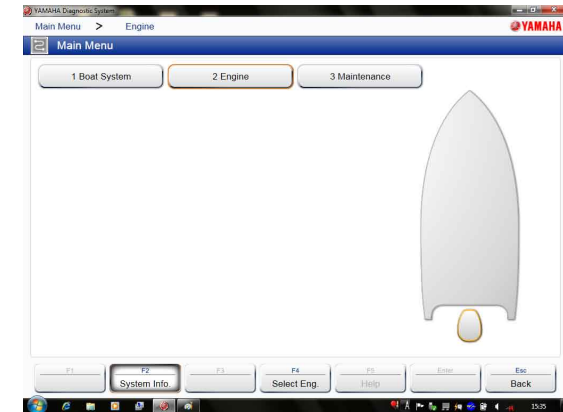
4. System Info. button

Displays the ECM number of the connected device.

1. Click the [System Info.] button or press the [F2] key on your keyboard.

2. The **System Information** dialog box appears.

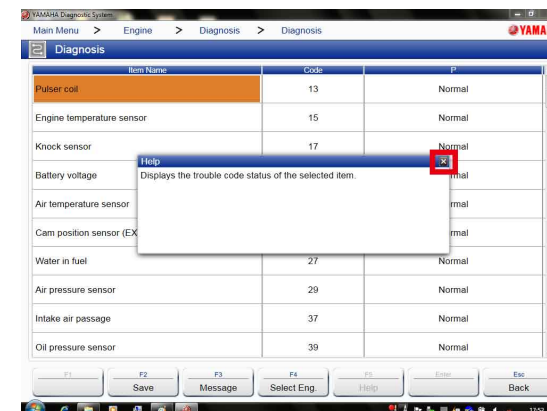
3. Click the [OK] button or press the [Enter] key on your keyboard.



5. Message button

A message for each function is displayed.

1. Click the [Message] button or press the [F3] key on your keyboard.
2. A message appears.
3. Click the [x] button to close the message.

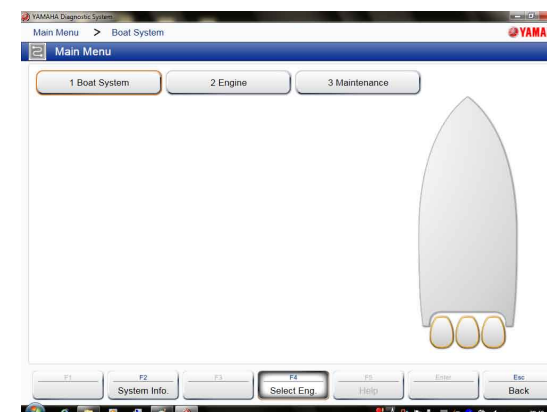


6. Select Eng. button

When using two or more outboard motors, you can select the outboard motor that you wish to view data for using the Diagnosis, Engine Monitor, Data Logger, or Engine oil change record function.

This function is not available when connected via K-Line.

1. Click the [Select Eng.] button or the engine icon, or press the [F4] key on your keyboard.



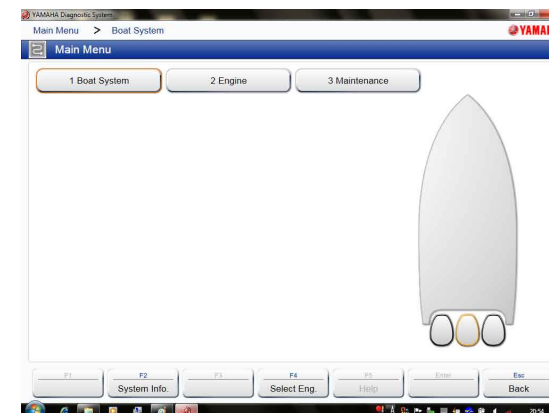
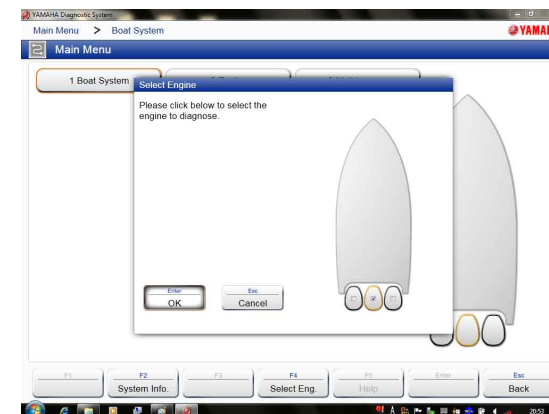
Common operations

2. The **Select Engine** window appears.
3. Check the checkbox of the engine to diagnose, and uncheck the checkbox of the engine that you do not wish to diagnose by either clicking it or using cursor keys and pressing the space bar on your keyboard.
4. Click the [OK] button or press the [Enter] key on your keyboard.

TIP: _____

By default, all checkboxes are checked and the engine icons have orange outlines.

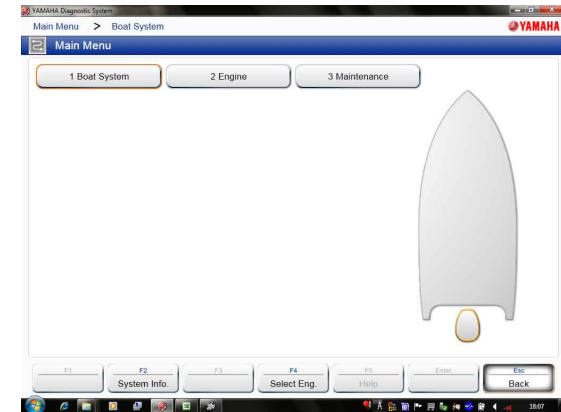
5. The engine icons with the checkboxes checked have orange outlines, and the engine icons with the checkboxes unchecked have black outlines.



7. Back button

You can return to the previous display using this button.

1. Click the [Back] button or press the [Esc] key on your keyboard.



Update

You can update the database when update information is provided.

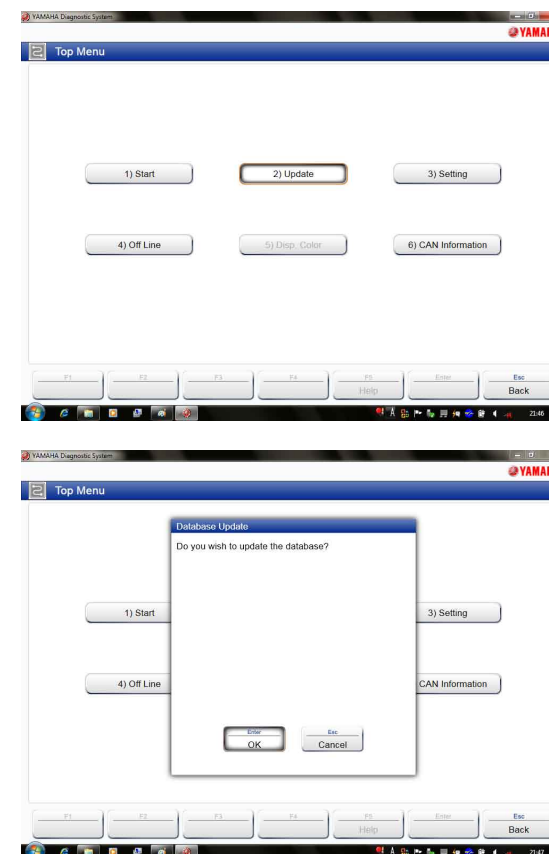
1. Display the **Top Menu** screen.
2. Click the [2) Update] button or press the [2] or [Enter] key on your keyboard.

3. A confirmation message appears.

4. Click the [OK] button or press the [Enter] key on your keyboard.

TIP: _____

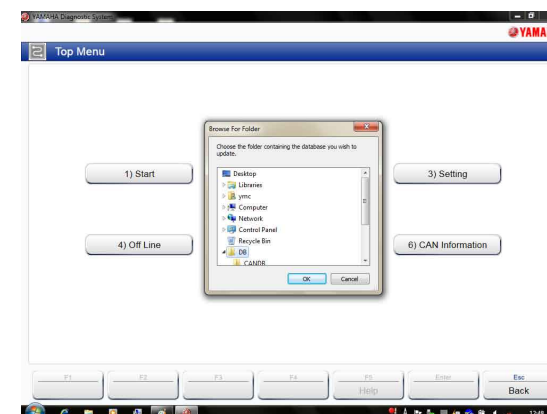
Click the [Cancel] button or press the [Esc] key on your keyboard to cancel the update.



5. The folder selection window appears.
6. Select the folder that contains the database.
7. Click the [OK] button or press the [Enter] key on your keyboard.

TIP: _____

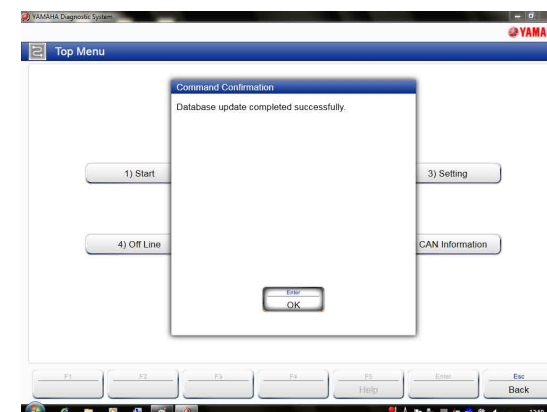
Click the [Cancel] button or press the [Esc] key on your keyboard to cancel the update.



8. A confirmation message appears.
9. Click the [OK] button or press the [Enter] key on your keyboard.

TIP: _____

If the update failed, an error message appears. Follow the instructions on screen.



Setting

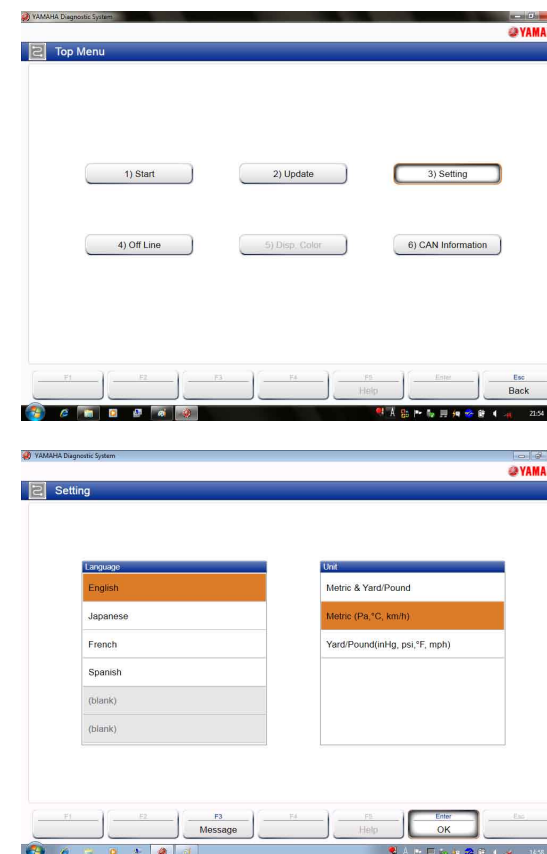
You can change the language and unit that are displayed on the Engine Monitor and during off-line operation.

1. Display the **Top Menu** screen.
2. Click the [3) Setting] button or press the [3] or [Enter] key on your keyboard.

3. The **Setting** screen is displayed.
4. Select a language and unit to use and click the [OK] button or press the [Enter] key on your keyboard.

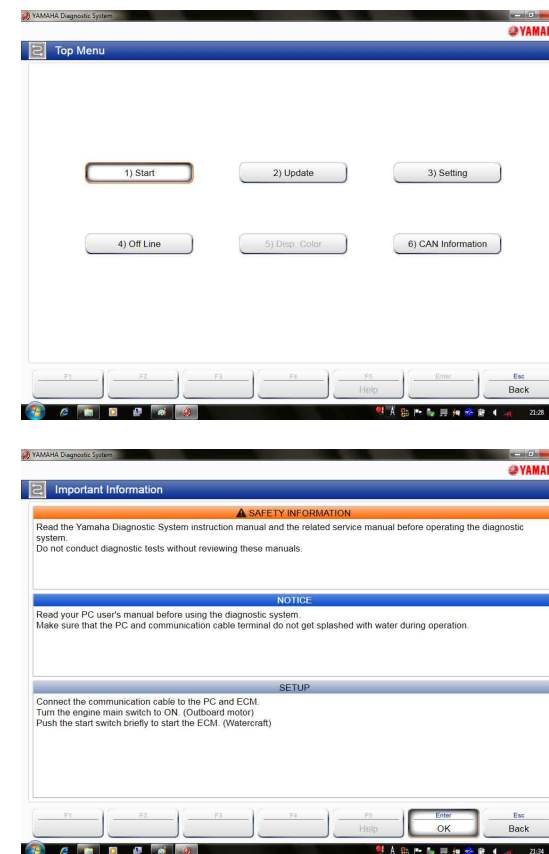
TIP:

- If you select “Metric & Yard/Pound” for the unit, both Metric and Yard/Pound units are displayed.
- When connected via K-Line, you cannot select display units.



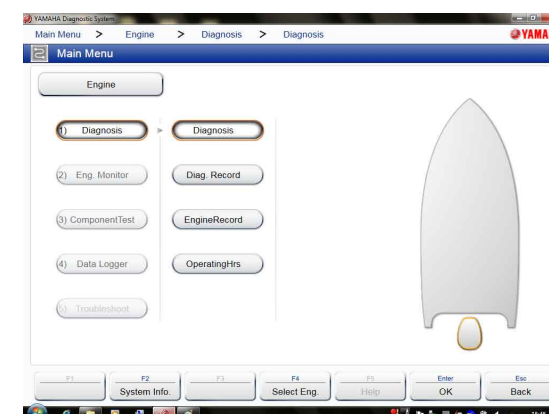
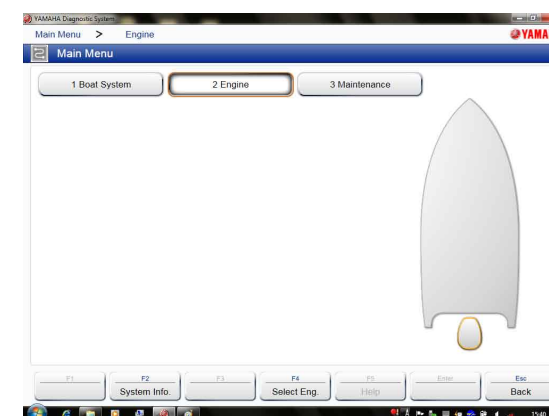
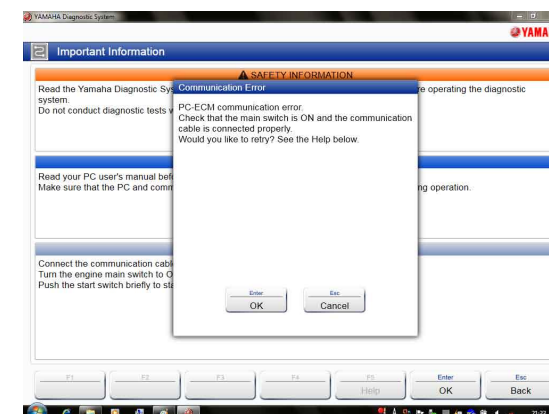
1. Diagnosis

1. Display the **Top Menu** screen.
2. Click the [1) Start] button or press the [1] or [Enter] key on your keyboard.
3. The **Important Information** screen is displayed.
4. Read the contents, and then click the [OK] button or press the [Enter] key on your keyboard.



TIP: _____
 If a communication error has been detected, an error message appears.
 Follow the instructions on screen.

5. The **Main Menu** screen is displayed.
6. Click [2 Engine] button or press the [2] or [Enter] key on your keyboard.
7. The Engine menu is displayed.
8. Click the [1) Diagnosis] button in the 2nd-level menu or press [1], [Enter], or right arrow key on your keyboard.
9. The 3rd-level menu is displayed.



1-1. Diagnosis

The diagnosis codes of malfunctions recorded in the ECM of the outboard motor, corresponding part names of the diagnosis codes, the results of the diagnosis, and the condition of the part are listed here.

Some items may not be available depending on the model of the outboard motor. See the corresponding service manual for further information.

Diagnosis codes and items

Code No.	Item
13	Pulser coil
14	Crank position sensor
15	Thermo sensor / Engine temperature sensor
17	Knock sensor
18	TPS
19	Battery voltage
22	Atmospheric pressure sensor
23	Air temperature sensor
24	Cam position sensor (EX)
25	Fuel pressure sensor
26	Injector
27	Water in fuel filter
28	Shift position switch
29	Air pressure sensor
37	Intake air passage

Code No.	Item
39	Oil pressure sensor
44	Engine shut-off switch
45	Shift cut-off switch
46	Thermoswitch
49	Overcooling
62	Fuel pressure too low
63	Intake system
68	VCT (S bank)
69	VCT (P bank)
71	Cam position sensor (S bank IN)
72	Cam position sensor (P bank IN)
73	OCV (S bank)
74	OCV (P bank)
83	PTT sensor

Code No.	Item
85	IDM
86	Immobilizer(*1)
112-119	ETV
121-123	ETV
124-128	TPS
129	ETV
131-135	APS
136-139	ETV
141-145	ETV
146-150	SPS
153-155	SPS
156-159	Engine-Remote control comm.
160-181	Remote control system
183 , 184	Remote control system
186-189	Remote control system

Refer to "Functions by model" for detailed information.

(*1) "****" is displayed depending on the model.

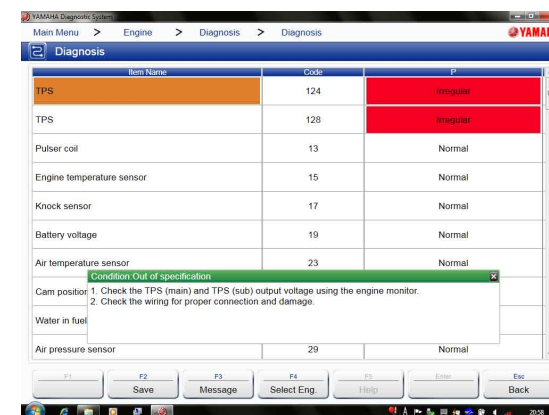
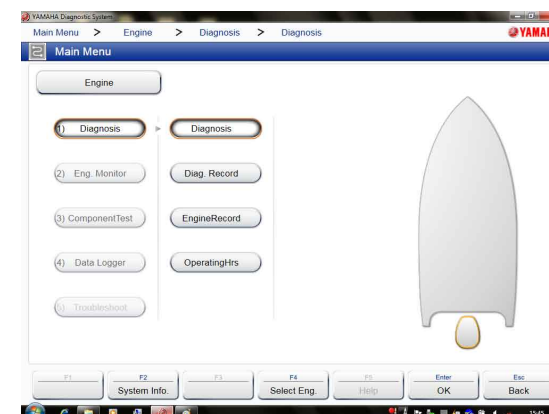
Immobilizer represents Y-COP.

1. Display the 3rd-level menu.
2. Click the [Diagnosis] in the 3rd-level menu or [OK] button, or press the [Enter] key on your keyboard.

3. The **Diagnosis** screen is displayed.

TIP: _____

- The cell will change to a red color and a message will be displayed for items deemed as being irregular.
- Items deemed as being irregular will be displayed at the top of the list. Three-digit codes are displayed above two-digit codes.
- Select the item deemed as being irregular by either clicking it or pressing the up or down arrow keys on your keyboard, and display the diagnosis procedure.



1-2. Diagnosis Record

The diagnosis codes of malfunctions that have been recorded in the ECM, corresponding items of the diagnosis codes, and the time when the malfunctions occurred are listed here.

Some items may not be available depending on the model of the outboard motor. See the corresponding service manual for further information.

Diagnosis record codes and items

Code No.	Item
13	Pulser coil
14	Crank position sensor
15	Thermo sensor / Engine temperature sensor
17	Knock sensor
18	TPS
19	Battery voltage
22	Atmospheric pressure sensor
23	Air temperature sensor
24	Cam position sensor (EX)
25	Fuel pressure sensor
26	Injector
27	Water in fuel filter
28	Shift position switch
29	Air pressure sensor
37	Intake air passage

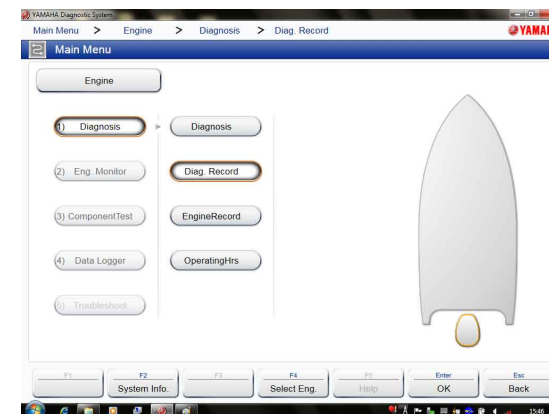
Code No.	Item
39	Oil pressure sensor
44	Engine shut-off switch
45	Shift cut-off switch
46	Thermoswitch
49	Overcooling
59	Memory data
62	Fuel pressure too low
68	VCT (S bank)
69	VCT (P bank)
71	Cam position sensor (S bank IN)
72	Cam position sensor (P bank IN)
73	OCV (S bank)
74	OCV (P bank)
83	PTT sensor

Code No.	Item
85	IDM
86	Immobilizer(*1)
112-119	ETV
121-123	ETV
124-128	TPS
129	ETV
131-135	APS
136-139	ETV
141-145	ETV
146-150	SPS
153-155	SPS
156 , 157	Engine-Remote control comm.
160-181	Remote control system
183 , 184	Remote control system
186 , 187	Remote control system

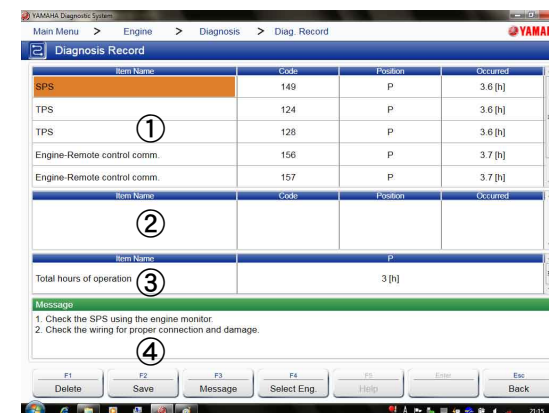
Refer to "Functions by model" for detailed information.

(*1) Immobilizer represents Y-COP.

1. Display the 3rd-level menu.
2. Click the [Diag. Record] button in the 3rd-level menu or [OK] button, or press the [Enter] key on your keyboard.



3. The **Diagnosis Record** screen is displayed.



- ① Displays diagnosis codes information.
- ② Displays “Water in fuel filter” and “Overheat record” diagnosis codes only.
- ③ Shows total hours of operation.
- ④ Displays the checking procedure for the selected diagnosis code.

■ Deleting diagnosis record in the ECM

You can delete the displayed diagnosis record.

1. Select the item that you wish to delete by either clicking it or pressing the up or down arrow keys on your keyboard.
2. Click the [Delete] button or press the [F1] key on your keyboard.

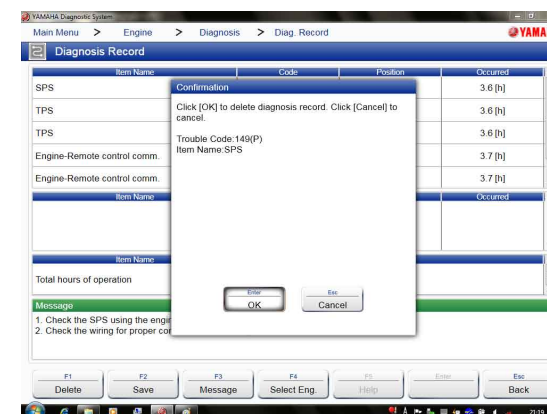
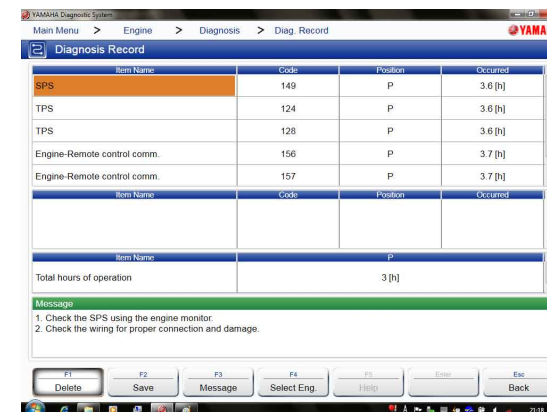
TIP:

Check that the items deleted are normal in the Diagnosis screen. If the items remain irregular, they will appear as irregular in the Diagnosis Record even if you try to delete them.

3. A confirmation message appears.
4. Click the [OK] button or press the [Enter] key on your keyboard.

TIP:

To cancel deletion, click the [Cancel] button or press the [Esc] key on your keyboard.



1-3. Engine Record

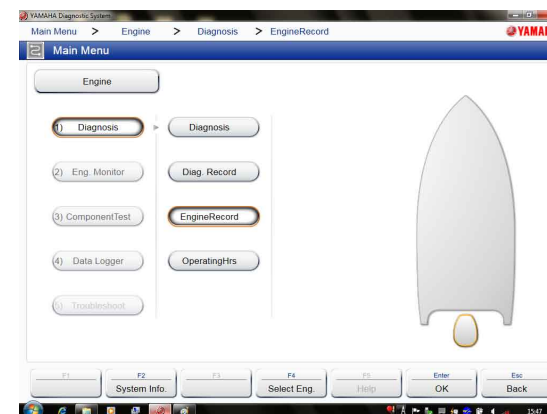
Data recorded on the ECM, including engine speed (max.) and total time for which they occurred, over-rev. count, overheat count, low oil pressure count, knock control count and total time for which they occurred, and total hours of operation, is displayed as a list.

Engine Record items

Item	Description
Engine speed (max.)	Indicates all-time peak engine speed (r/min), and time of its occurrence.
Over-rev. count	Indicates the number of times that over-rev prevention control has been triggered to date.
Overheat count	Indicates the number of times that the overheat switch has been activated to date.
Low oil pressure count	Indicates the number of times that the oil pressure sensor has detected the low oil pressure to date.
Knock control count	Indicates the number of times that the knocking control has been triggered to date.
Total hours of operation	Indicates the total operating hours of the engine.

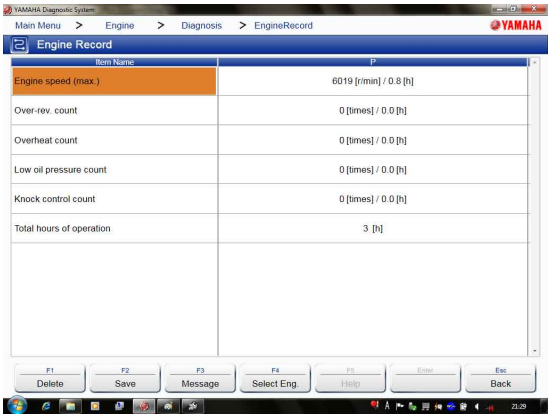
Refer to “Functions by model” for detailed information.

1. Display the 3rd-level menu.
2. Click the [EngineRecord] in the 3rd-level menu or [OK] button, or press the [Enter] key on your keyboard.



3. The **Engine Record** screen is displayed.

TIP: _____
Only Engine speed (max.) can be reset.



1-4. Engine operating hours

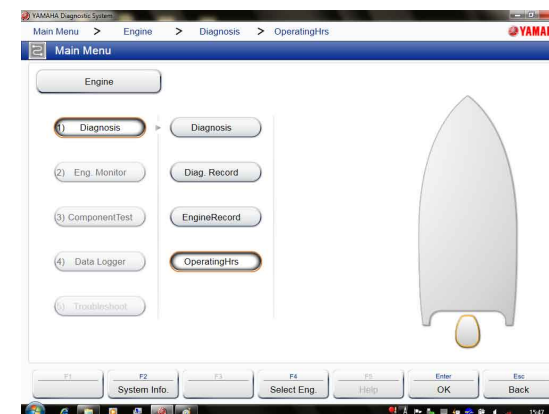
The operating hours as compared to the engine speed and the total operating hours are displayed.

1. Display the 3rd-level menu.
2. Click the [OperatingHrs] button in the 3rd-level menu or press the [Enter] key on your keyboard.

3. The **Engine operating hours by RPM** screen is displayed showing the number of hours that the engine was operated at each engine speed range.

TIP:

- Even when the engine is running, the time displayed is the total operating hours up until the Engine operating hours by RPM was displayed.
- The total operating hours are rounded up to one decimal place, and so are not equal to the total of the various operating times.



The screenshot shows the 'Engine operating hours by RPM' screen. The breadcrumb trail at the top reads 'Main Menu > Engine > Diagnosis > OperatingHrs'. The screen displays a table with two columns: 'Engine Speed' and 'Hr'. The data is as follows:

Engine Speed	Hr
- 1000 r/min	3.2 [h]
1000 - 2000 r/min	0.0 [h]
2000 - 3000 r/min	0.5 [h]
3000 - 4000 r/min	0.0 [h]
4000 - 5000 r/min	0.0 [h]
5000 - 6000 r/min	0.0 [h]
6000 - 7000 r/min	0.0 [h]
Total hours of operation	3 [h]

At the bottom, there are function keys: F1 (Save), F2 (Message), F3 (Select Eng.), F4 (Help), F5 (Enter/OK), and F6 (Esc/Back).

2. Engine Monitor

⚠ WARNING

Do not use the Engine Monitor function to check the engine condition while operating a boat, or you may become distracted, which could result in a collision.

NOTICE

Make sure to avoid splashing water on the computer, adapter, and USB cable and to avoid damaging them with strong sudden jolts or vibration.

Data received from ECM related to each part is displayed while the engine start switch is ON.

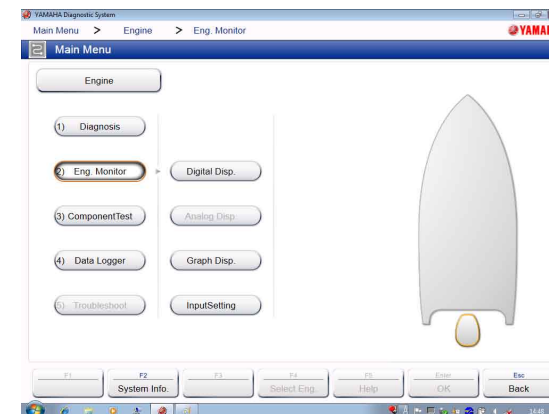
Engine monitor items

Monitor item	Monitor item	Monitor item	Monitor item
Engine speed	SPS 2	PTT sensor	Shift cut-off command
Fuel pressure	Shift request	Cooling water pressure(*1)	Thermoswitch
Intake air pressure	ISC valve opening angle	Speed(*1)	R/C ECM signal
TPS 1	Atmospheric pressure	Oil plunger pump discharge	Main switch signal
TPS 2	Battery voltage	Cylinder #1 firing state	Start/stop button
Throttle valve opening angle	Fuel injection duration	Cylinder #2 firing state	Possible to start
APS 1	Ignition timing	Cylinder #3 firing state	Main relay
APS 2	Oil pressure switch	Cylinder #4 firing state	ETV relay
Throttle request	O2 sensor voltage	Cylinder #5 firing state	Fuel pump relay
LPS (main)	TPS voltage	Cylinder #6 firing state	Shift actuator relay
LPS (sub)	Throttle valve opening angle	Starter relay	Free throttle switch
LPS_PORT (main)	Cooling water temperature	Main switch	PTT switch UP
LPS_PORT (sub)	Engine temperature	Engine shut-off switch	PTT switch DOWN
LPS_STBD (main)	Intake air temperature	Shift position switch	Water detection switch
LPS_STBD (sub)	Oil pressure	Shift position judgment	Oil level switch (remote tank)
Active remote control	Intake cam timing (S bank)	Multi-engine system	Oil level switch1(engine tank)
SPS 1	Intake cam timing (P bank)	Over-rev. control release lead	Oil level switch2(engine tank)
		Shift cut-off	Oil level switch3(engine tank)

Refer to “Functions by mode” for detailed information.

(*1) If not equipped with optional equipment, invalid values are displayed for these items.

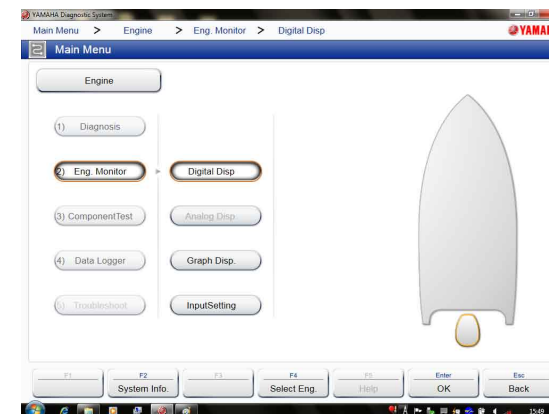
1. Display the Engine menu.
2. Click the [2) Eng. Monitor] button in the 2nd-level menu or press the [2], [Enter], or right arrow key on your keyboard.
3. The 3rd-level menu is displayed.



2-1. Digital Display

The data from the ECM of the outboard motor is displayed in numerical value.

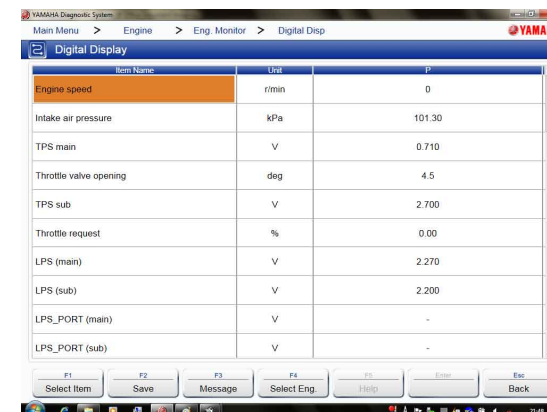
1. Display the 3rd-level menu.
2. Click the [Digital Disp] in the 3rd-level menu or [OK] button, or press the [Enter] key on your keyboard.



3. The current engine condition is displayed in numerical value.

TIP:

- Ten items can be displayed at one time. To view the other items, scroll the display.
- You can change the display items. See “[Selecting the display items.](#)”

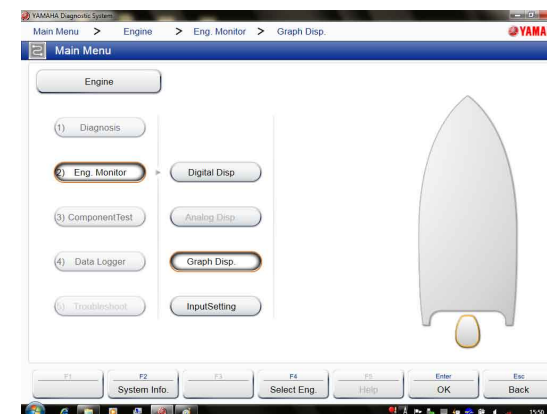


2-2. Graph Display

The data from the ECM of the outboard motor is displayed in a graph.

Three graph items can be displayed at one time.

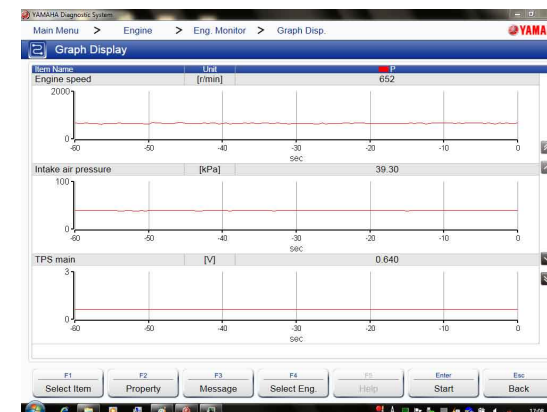
1. Display the 3rd-level menu.
2. Click the [Graph Disp.] in the 3rd-level menu or [OK] button, or press the [Enter] key on your keyboard.



3. The current engine condition is displayed in a graph.

TIP:

- To view other items, click the [] and [] buttons, or press the up or down arrow keys on your keyboard, or click the [] and [] buttons to move through the screens one by one.
- You can change the settings of the graph display. See “[Setting the graph properties.](#)”



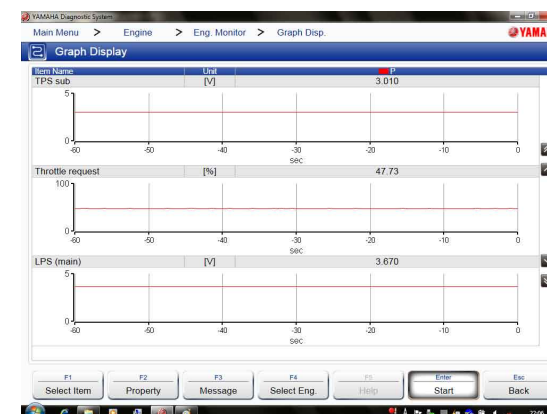
■ Saving graph data

You can save the displayed data on a computer and play it back later.

1. To start saving data, click the [Start] button or press the [Enter] key on your keyboard.

TIP:

When recording starts, the button display switches from [Start] to [Stop].



2. Click the [Stop] button or press the [Enter] key on your keyboard to finish data recording.

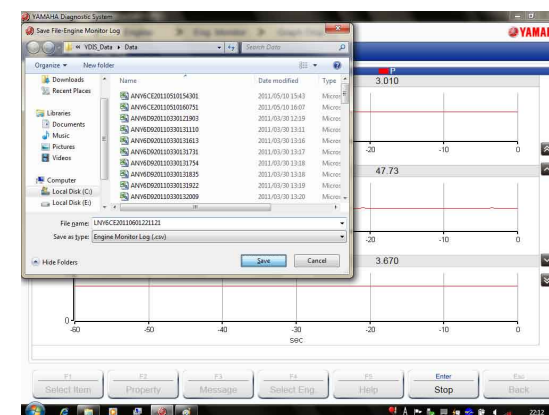
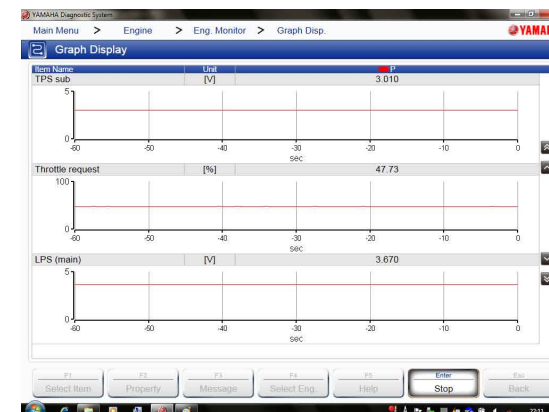
3. The **Save File** window is displayed.

4. Select the disk and folder where the data will be saved and assign a file name.

5. Click the [Save] button or press the [Enter] key on your keyboard to save data.

TIP:

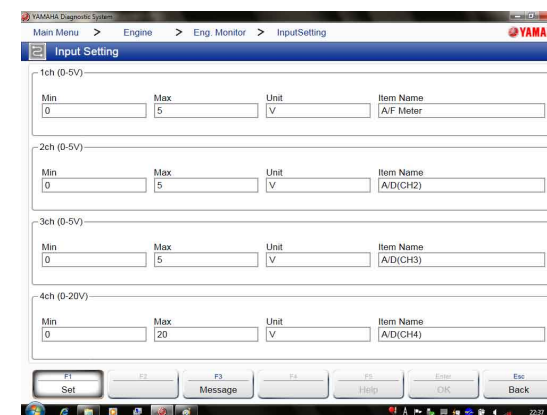
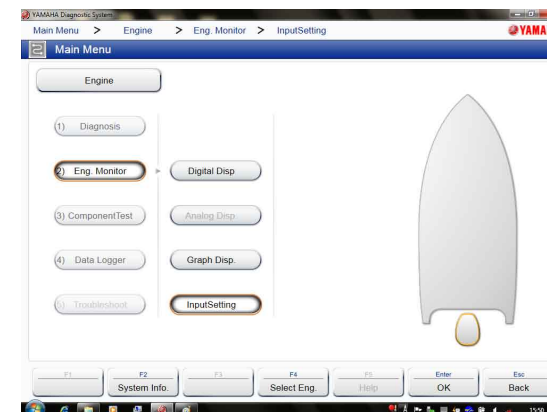
- The program allows you to view saved graph data off-line.
- Click the [Cancel] button or press the [Esc] key on your keyboard to delete recorded data.



2-3. Input Setting

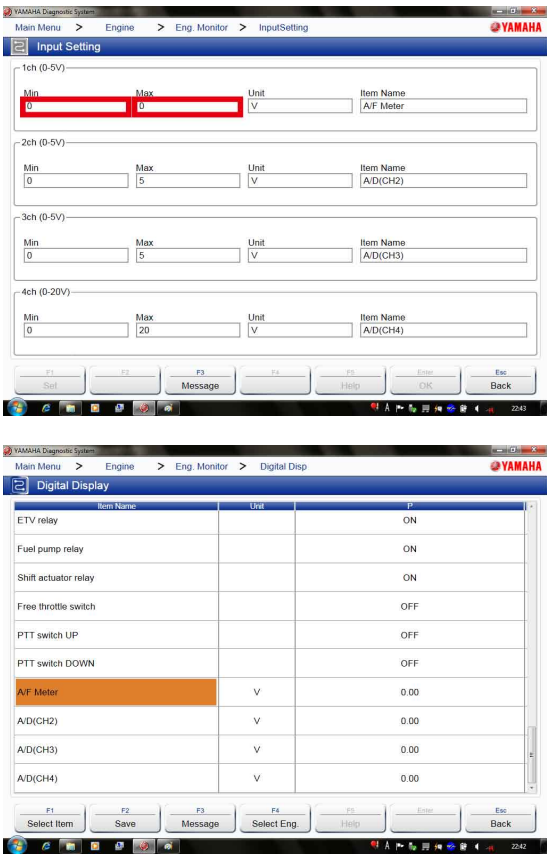
Set the input figures for displaying data on the YAMAHA Diagnostic System screen.

1. Display the 3rd-level menu.
2. Click the [InputSetting] in the 3rd-level menu or [OK] button, or press the [Enter] key on your keyboard.
3. The **Input Setting** screen is displayed.
4. Enter the name of the connected external devices and enter the minimum and maximum values for the graph.
5. Click the [Set] button or press the [Enter] key on your keyboard.



- TIP:** _____
- The textbox frame appears in red if the minimum and maximum values are not entered.
 - Values entered as the minimum and maximum values will return to the default figures when the [Set] button is clicked.
- _____

6. The setting value is displayed on the screen.



3. Component Test

You can perform a simple good/bad evaluation and engine adjustment by operating the engine components with the YAMAHA Diagnostic System on a standalone basis to check the running sound and state.

This function can be carried out for a single engine.

TIP:

When multiple engines are selected, an engine selection request message appears. Follow the instructions on screen.

3-1. Stationary Test

Perform the test when the engine is stopped and the shift is in the N position.

Stationary Test items

Item
Activate ignition coil
Activate injector
Activate electric fuel pump
Activate low-pressure fuel pump
Activate oil plunger pump
Activate ISC valve
Activate OCV

Refer to “Functions by model” for detailed information.

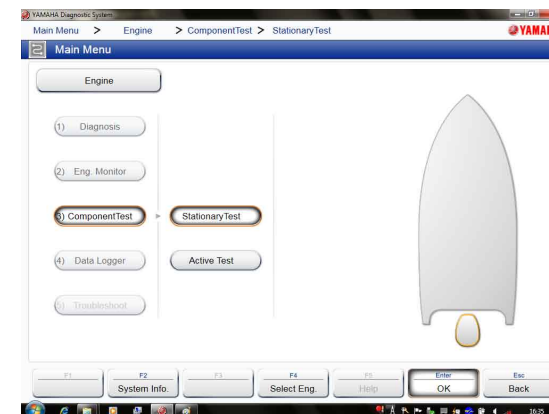
1. Display the Engine menu.
2. Click the [3) ComponentTest] button in the 2nd-level menu or press the [3], [Enter] or right arrow key on your keyboard.
3. The 3rd-level menu is displayed.
4. Click the [StationaryTest] in the 3rd-level menu or [OK] button, or press the [Enter] key on your keyboard.
5. The test item selection screen is displayed.

NOTICE

Avoid clicking the [Execute] and [Cancel] buttons repeatedly, otherwise the ECM or computer may not work properly and they may be damaged.

TIP:

- When the engine is running, or the shift is in the F or R position, an error message appears on screen, and no tests can be carried out.
- If an error has been detected during the test, an error message appears. Follow the instructions on screen.



■ Ignition coil activation test

⚠ WARNING

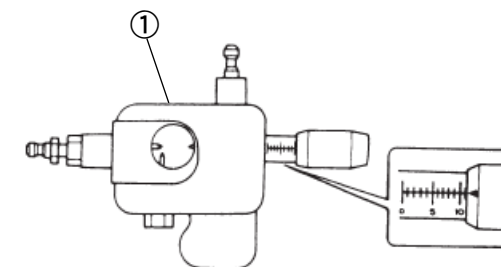
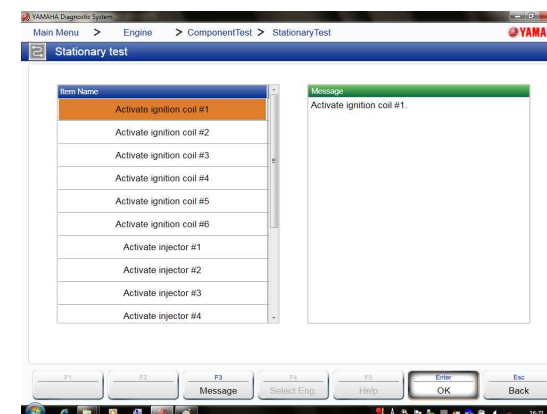
- Do not touch the ignition tester (spark checker) wiring during testing.
- Make sure to cover the spark plug cap so that there are no leaks.
- Keep flammable gas, fuel, and oil at a distance, as sparks may fly during testing.

Perform an ignition system test. Apply voltage to the ignition coil of the selected cylinder to generate a spark (5 times in 5 seconds) while the spark plug lead is connected to an ignition tester (spark checker).

1. Display the test item selection screen.
2. Select “Activate ignition coil” by either clicking it or pressing the up or down arrow keys on your keyboard.
3. Click the [OK] button or press the [Enter] key on your keyboard.
4. Connect the spark plug cap of the cylinder that will be tested to the ignition tester (spark checker).
5. Connect the ignition tester (spark checker) to ground.
6. Set the spark gap by turning the adjusting knob.

TIP:

A special service tool is needed.

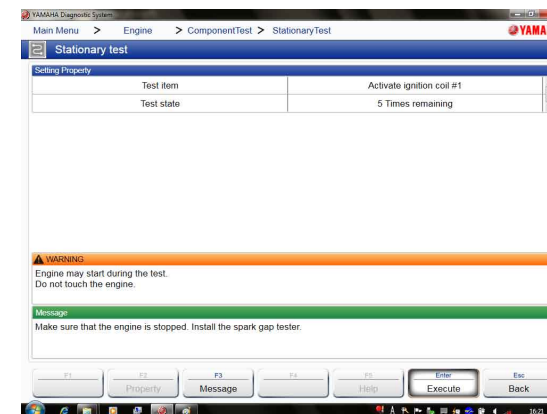


- ① North America: Spark checker (YM-34487)
Worldwide: Ignition tester (90890-06754)

7. The test screen is displayed.
8. Click the [Execute] button or press the [Enter] key on your keyboard.
9. Check the state of the ignition spark.

TIP: _____

- After starting the test, the button display switches from [Execute] to [Cancel].
 - Click the [Cancel] button or press the [Esc] key on your keyboard to stop the test.
 - To carry out the test again, click the [Execute] button or press the [Enter] key on your keyboard.
 - When testing a different cylinder or item, click the [Back] button or press the [Esc] key on your keyboard to return to the previous screen.
-



■ Injector activation test

⚠ WARNING

- Do not perform the test with the injector removed or with any fuel system parts removed. High-pressure fuel may spray out.
- When performing this operation, keep all sparks, flames, or other sources of ignition away from the testing area. Gasoline is highly flammable.

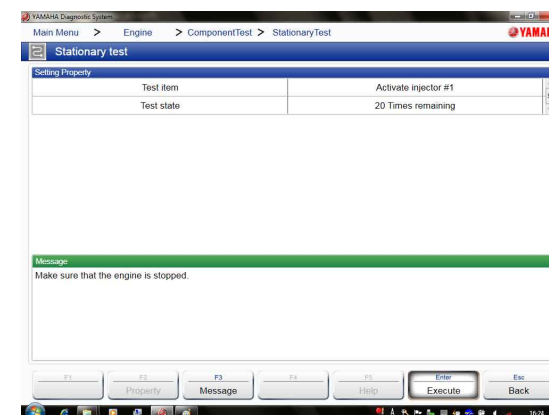
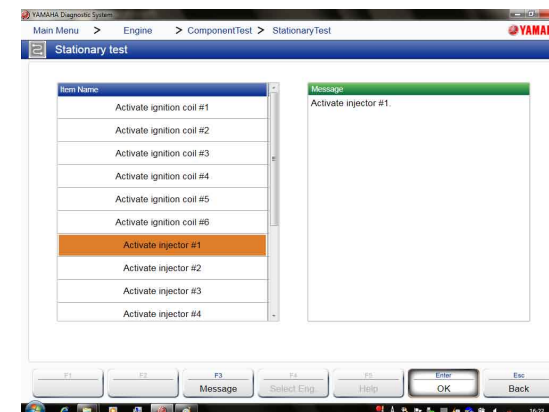
1. Display the test item selection screen.
2. Select “Activate injector” by either clicking it or pressing the up or down arrow keys on your keyboard.
3. Click the [OK] button or press the [Enter] key on your keyboard.
4. The test screen is displayed.
5. Click the [Execute] button or press the [Enter] key on your keyboard.
6. Listen to the operating sound of the injector.

NOTICE

Do not test the same cylinder more than 3 times consecutively, as it may damage the spark plug insulators.

TIP:

- Click the [Cancel] button or press the [Esc] key on your keyboard to stop the test.
- To carry out the test again, click the [Execute] button or press the [Enter] key on your keyboard.
- When testing a different cylinder or item, click the [Back] button or press the [Esc] key on your keyboard to return to the previous screen.



■ Electric fuel pump activation test

Apply voltage to the electric fuel pump and activate it to check the fuel system.

Activate the electric fuel pump for 10 seconds.

1. Display the test item selection screen.
2. Select “Activate electric fuel pump” by either clicking it or pressing the up or down arrow keys on your keyboard.
3. Click the [OK] button or press the [Enter] key on your keyboard.

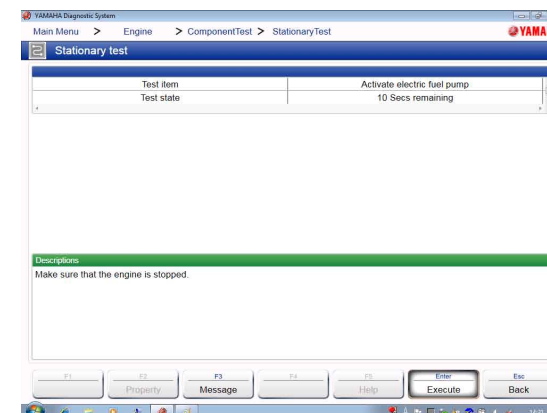
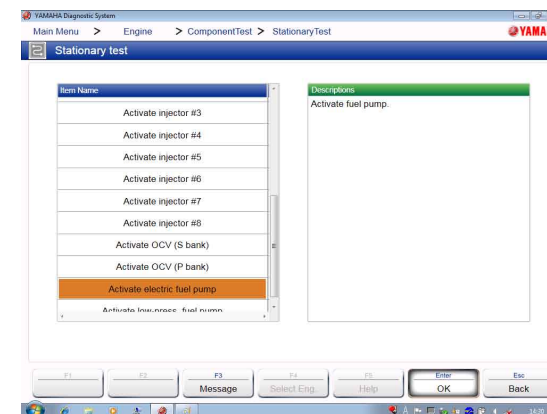
⚠ WARNING

- Do not perform the test with the injector removed or with any fuel system parts removed. High-pressure fuel may spurt out.
- When performing this operation, keep all sparks, flames, or other sources of ignition away from the testing area. Gasoline is highly flammable.

4. The test screen is displayed.
5. Click the [Execute] button or press the [Enter] key on your keyboard.
6. Listen to the operating sound of the Electric fuel pump.

TIP:

- Click the [Cancel] button or press the [Esc] key on your keyboard to stop the test.
- To carry out the test again, click the [Execute] button or press the [Enter] key on your keyboard.
- To perform a different test, click the [Back] button or press the [Esc] key on your keyboard to return to the previous screen.



■ Low-pressure fuel pump activation test

Apply voltage to the electric fuel pump and activate it for 10 seconds.

You cannot carry out this test on mechanical fuel pumps.

1. Display the test item selection screen.
2. Select “Activate low-press. fuel pump” by either clicking it or pressing the up or down arrow keys on your keyboard.
3. Click the [OK] button or press the [Enter] key on your keyboard.

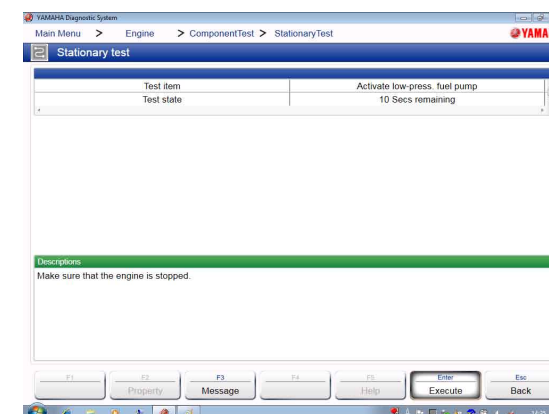
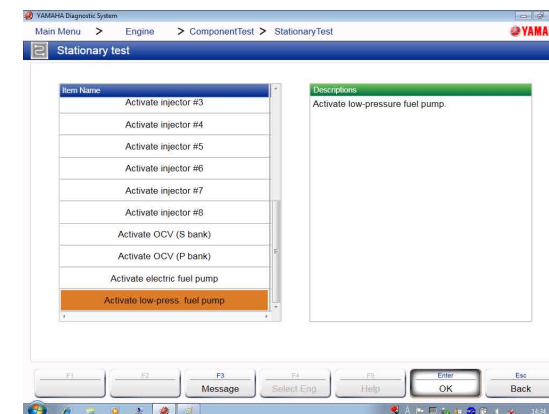
NOTICE

Perform this test after priming with fuel. During this test, failure to supply fuel to the low-pressure fuel pump may cause the pump damage.

4. The test screen is displayed.
5. Click the [Execute] button or press the [Enter] key on your keyboard.
6. Listen to the operating sound of the low-pressure fuel pump.

TIP:

- Click the [Cancel] button or press the [Esc] key on your keyboard to stop the test.
- To carry out the test again, click the [Execute] button or press the [Enter] key on your keyboard.
- To perform a different test, click the [Back] button or press the [Esc] key on your keyboard to return to the previous screen.



■ Oil plunger pump activation test

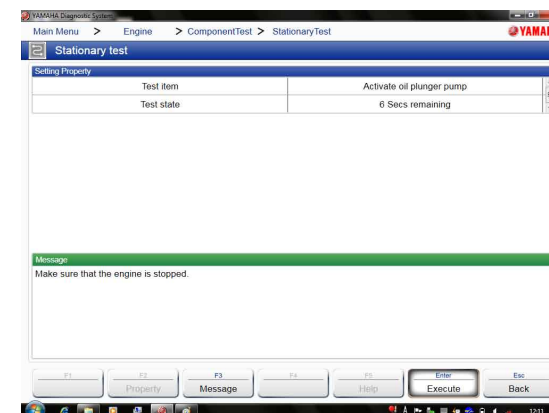
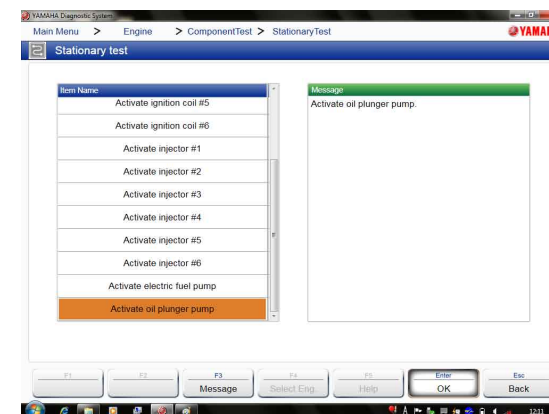
Apply voltage to the oil plunger pump (electric oil pump), and activate it to check that it outputs oil. Activate the oil plunger pump (electric oil pump) for 6 seconds.

1. Display the test item selection screen.
2. Select “Activate oil plunger pump” by either clicking it or pressing the up or down arrow keys on your keyboard.
3. Click the [OK] button or press the [Enter] key on your keyboard.

NOTICE

Do not allow any air to enter the oil hose.

4. The test screen is displayed.



- 5.** Remove the oil hose from the vapor separator.
- 6.** Click the [Execute] button or press the [Enter] key on your keyboard.

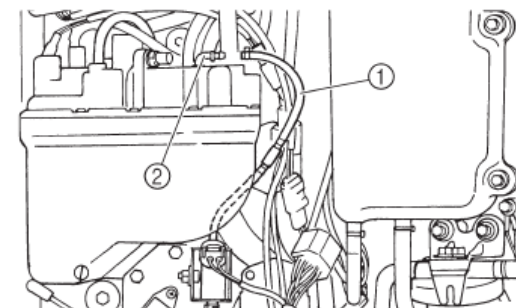
TIP: _____

Click the [Cancel] button or press the [Esc] key on your keyboard to stop the test.

- 7.** Place a pan under the oil hose, and check that oil is discharged from the oil hose.
- 8.** When the test is completed, connect the oil hose.

TIP: _____

- To carry out the test again, click the [Execute] button or press the [Enter] key on your keyboard.
 - To perform a different test, click the [Back] button or press the [Esc] key on your keyboard to return to the previous screen.
-



- ① Oil hose
- ② Vapor separator

■ ISC valve activation test

Apply voltage to the ISC valve and activate it for 3 seconds.

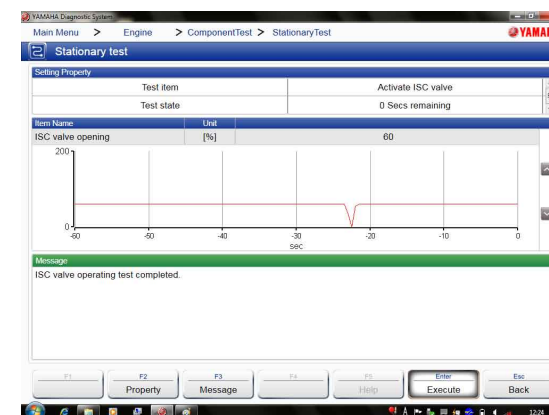
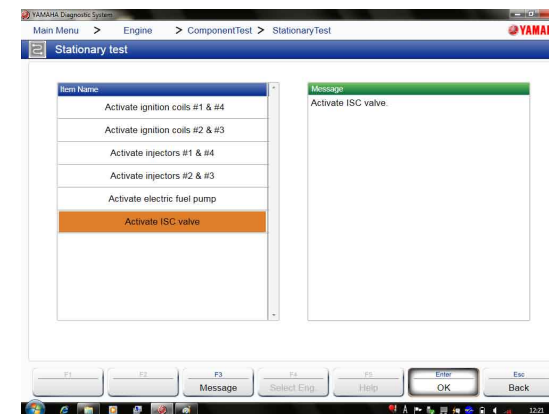
1. Display the test item selection screen.
2. Select “Activate ISC valve” by either clicking it or pressing the up or down arrow keys on your keyboard.
3. Click the [OK] button or press the [Enter] key on your keyboard.
4. The test screen is displayed.
5. Click the [Execute] button or press the [Enter] key on your keyboard.
6. Listen to the operating sound of the ISC valve.

TIP:

- Click the [Cancel] button or press the [Esc] key on your keyboard to stop the test.
- To carry out the test again, click the [Execute] button or press the [Enter] key on your keyboard.
- To perform a different test, click the [Back] button or press the [Esc] key on your keyboard to return to the previous screen.
- This test will set the ISC valve opening to the initial value.

For models with the ISC valve that is open in its initial state, check that the ISC valve opening changes to 100% or greater.

For models with the ISC valve that is closed in its initial state, check that the ISC valve opening changes to 0%.



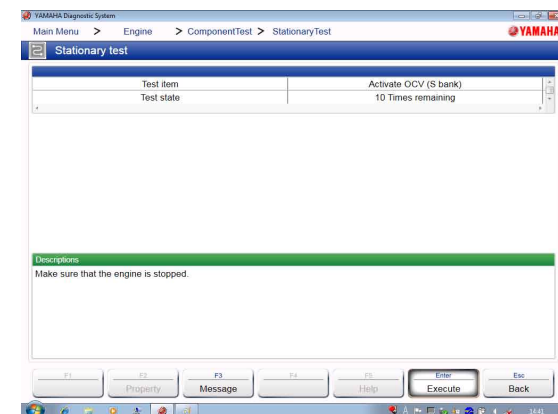
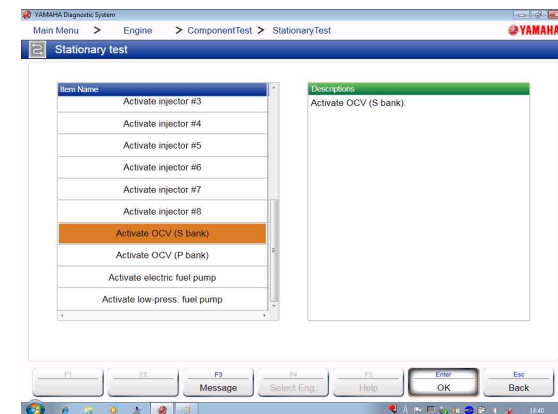
■ OCV activation test

Apply voltage to the OCV and activate it for 10 seconds.

1. Display the test item selection screen.
2. Select “Activate OCV” by either clicking it or pressing the up or down arrow keys on your keyboard.
3. Click the [OK] button or press the [Enter] key on your keyboard.
4. The test screen is displayed.
5. Click the [Execute] button or press the [Enter] key on your keyboard.
6. Listen to the operating sound of the OCV.

TIP:

- Click the [Cancel] button or press the [Esc] key on your keyboard to stop the test.
- To carry out the test again, click the [Execute] button or press the [Enter] key on your keyboard.
- To perform a different test or perform the test on a different OCV, click the [Back] button or press the [Esc] key on your keyboard to return to the previous window.



3-2. Active Test

Perform the test when the engine is running and the shift is in the N position.
It is not possible to carry out the test while the boat is moving.

Active Test items

Item
Drop cylinder
Fully open ISC valve
Fix ISC valve opening angle

Refer to “Functions by model” for detailed information.

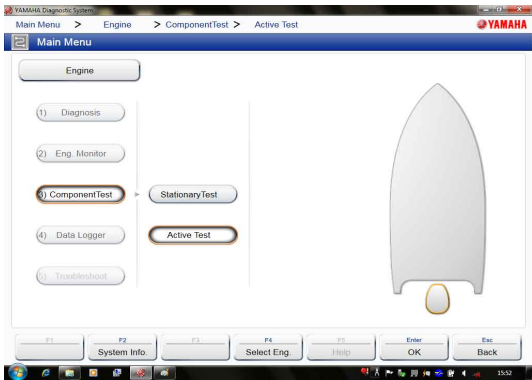
- 1. Display the Engine menu.
- 2. Click the [3) ComponentTest] button in the 2nd-level menu or press the [3], [Enter] or right arrow key on your keyboard.
- 3. The 3rd-level menu is displayed.
- 4. Click the [Active Test] in the 3rd-level menu or [OK] button, or press the [Enter] key on your keyboard.
- 5. The test item selection screen is displayed.

NOTICE

Avoid clicking the [Execute] and [Cancel] buttons repeatedly, otherwise the ECM or computer may not work properly and they may be damaged.

TIP:

If an error has been detected during the test, an error message appears. Follow the instructions on screen.



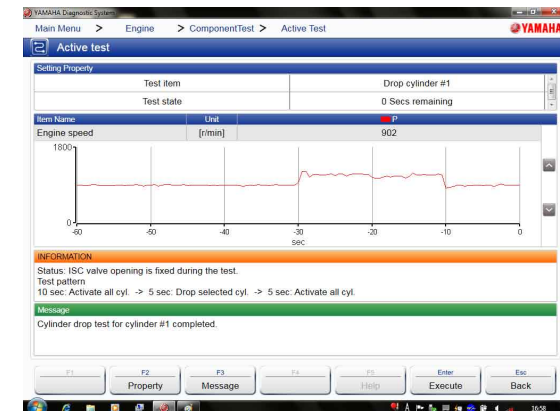
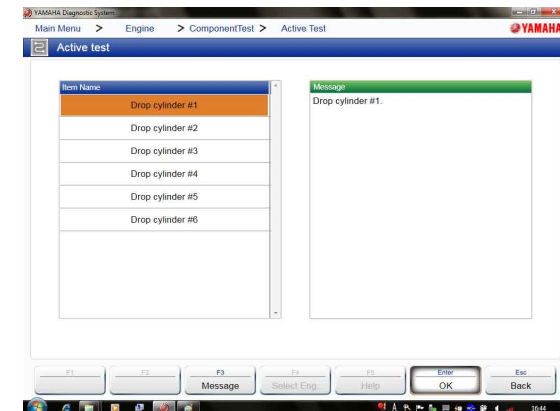
■ Cylinder drop test

Perform cylinder drop test to observe the affect on engine speed as a selected cylinder is deactivated for 5 seconds during a 20 second cycle. Note that the ISC valve is placed in a fixed position during this test to allow easier viewing of rpm change as each cylinder is deactivated.

1. Display the test item selection screen.
2. Select “Drop cylinder” by either clicking it or pressing the up or down arrow keys on your keyboard.
3. Click the [OK] button or press the [Enter] key on your keyboard.
4. The test screen is displayed.
5. Start the engine.
6. Click the [Execute] button or press the [Enter] key on your keyboard.
7. Check variations in engine speed, vibration, and noise.

TIP:

- Click the [Cancel] button or press the [Esc] key on your keyboard to stop the test.
- To carry out the test again, click the [Execute] button or press the [Enter] key on your keyboard.
- To perform a different test or perform the test on a different cylinder, click the [Back] button or press the [Esc] key on your keyboard to return to the previous screen.



■ Fully open ISC valve test

⚠ WARNING

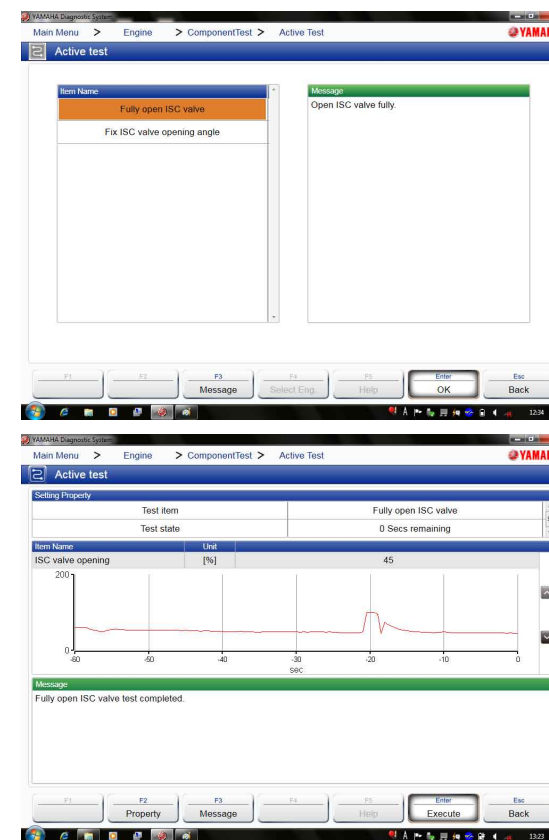
Opening the ISC valve fully will raise the engine speed. Do not set the shift in the F or R position.

This test allows verifying ISC valve opening. With the engine idling in neutral, voltage is applied (for 2 seconds) to increase the opening of the ISC valve with a corresponding increase in idle speed.

1. Display the test item selection screen.
2. Select “Fully open ISC valve” by either clicking it or pressing the up or down arrow keys on your keyboard.
3. Click the [OK] button or press the [Enter] key on your keyboard.
4. The test screen is displayed.
5. Click the [Execute] button or press the [Enter] key on your keyboard.
6. Open the ISC valve fully and check that the engine speed increases.

TIP:

- Click the [Cancel] button or press the [Esc] key on your keyboard to stop the test.
- To carry out the test again, click the [Execute] button or press the [Enter] key on your keyboard.
- To perform a different test, click the [Back] button or press the [Esc] key on your keyboard to return to the previous screen.
- Testing that rapidly operates ISC may result in the engine stalling during testing.



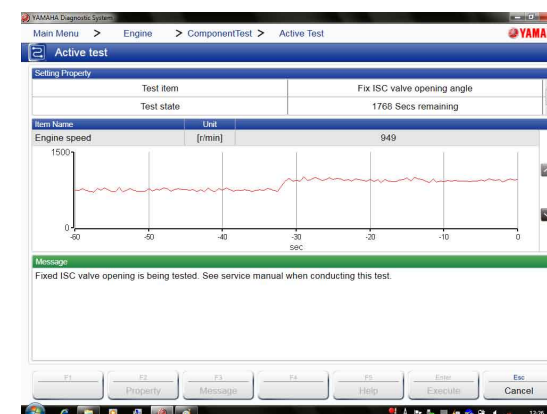
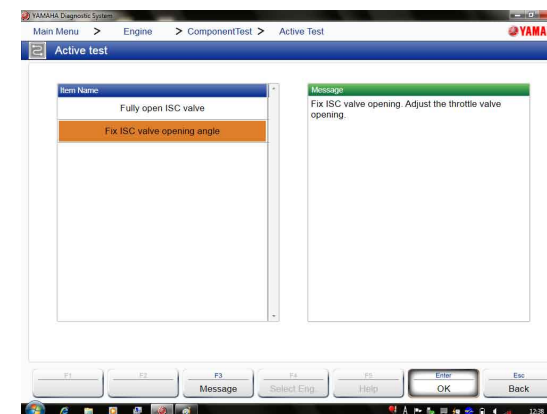
■ Fixed ISC valve opening angle test

To be able to perform TPS adjustment, ISC valve opening angle will be fixed for 30 minutes.

1. Display the test item selection screen.
2. Select “Fix ISC valve opening angle” by either clicking it or pressing the up or down arrow keys on your keyboard.
3. Click the [OK] button or press the [Enter] key on your keyboard.
4. Warm up the engine before performing the test.
5. The test screen is displayed.
6. Click the [Execute] button or press the [Enter] key on your keyboard.
7. Click the [☒] button to enable checking of engine speed, TPS voltage, and throttle valve opening angle while ISC is fixed.

TIP:

- Click the [Cancel] button or press the [Esc] key on your keyboard to stop the test.
- To carry out the test again, click the [Execute] button or press the [Enter] key on your keyboard.
- To perform a different test, click the [Back] button or press the [Esc] key on your keyboard to return to the previous screen.



4. Data Logger

You can display and compare engine data recorded in the ECM on a graph, and record the engine running state in an adapter. When multiple engines are selected, an engine selection request message appears. Follow the instructions on screen.

4-1. Logger graph

Displays, in graph form, data of engine operation stored in the ECM for the last 13 minutes (19 minutes depending on the model) in 1 minute intervals. Three items can be displayed at one time.

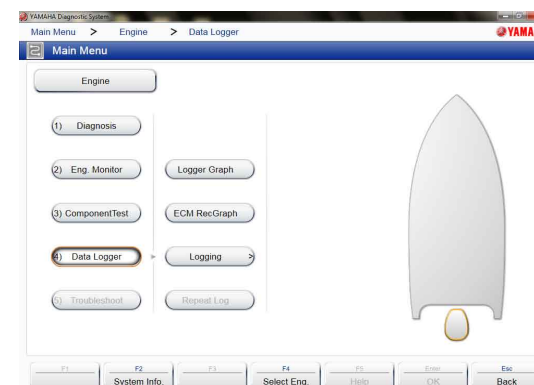
Data graph display items

Item
Engine speed
Battery voltage
TPS
Engine temperature
Intake air pressure
Oil pressure

Item
Throttle request
SPS
Fuel pressure
O2 sensor voltage
Cooling water temperature
Oil pressure switch

Refer to “Functions by model” for detailed information.

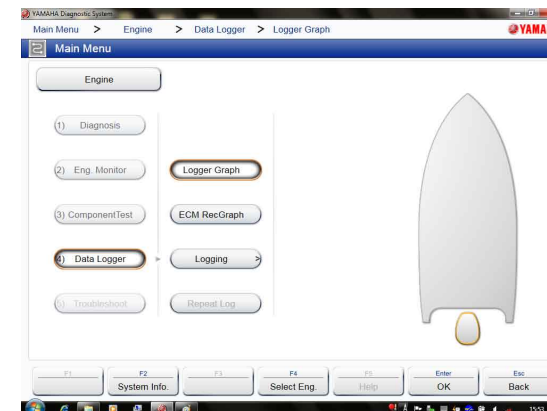
1. Display the Engine menu.
2. Click the [4] Data Logger] button in the 2nd-level menu or press the [4], [Enter] or right arrow key on your keyboard.
3. The 3rd-level menu is displayed.



4. Display the 3rd-level menu.
5. Click the [Logger Graph] in the 3rd-level menu or [OK] button, or press the [Enter] key on your keyboard.

TIP:

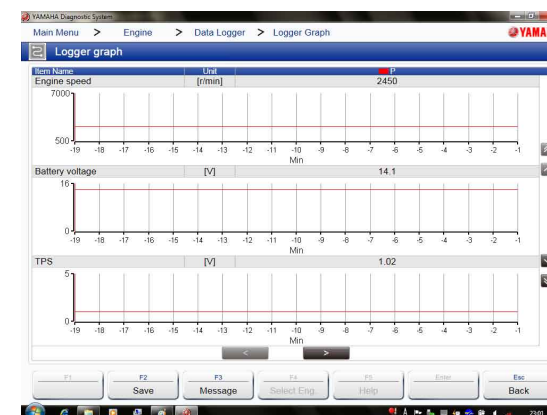
- Even while the engine is running, the graph display does not show the current engine state. The graph shows the figures from the moment when the [Logger Graph] or the [OK] button was clicked, or the [Enter] key was pressed.
- Some items may not be available depending on the model of the outboard motor.



6. The **Logger graph** is displayed.

TIP:

- To view other items, click the [↑] or [↓] buttons, or press the up or down arrow keys on your keyboard or the [↕] or [↘] buttons to move through the screens one at a time.
- Click the [<] or [>] buttons or press the right or left arrow keys on your keyboard to move the guidelines (the red lines) position one gradient in the relevant direction. The figures for the position that matches the guidelines (the red lines) appear at the top right of the table.



4-2. ECM Record graph

When a problem occurs in the electronic throttle system, you can display data for 2 seconds before and after the problem recorded on the ECM, for a total of 4 seconds.

You can select the display type from 3 types of fixed patterns stored in the database. You can also select all display patterns.

ECM record graph display items

Item	Item	Item
Engine speed	Target TPS voltage(*1)	Engine stop mode
APS 1	Target TPS voltage for ISC(*2)	Engine start mode
APS 2	Ref. TPS voltage(*3)	Engine stop mode with switch
TPS 1	Ref. APS voltage(*4)	Engine shut-off switch
TPS 2	Engine operating hours	Main relay
Throttle request	Trigger	ETV relay
Intake air pressure	Code	Overheat alert
Battery voltage	Active Remote Control	Low oil pressure

Refer to “Functions by model” for detailed information.

(*1) “Target TPS voltage” stands for “Target Throttle Position Sensor voltage.” This item shows the target output voltage of TPS. This value means that ECM should control to open throttle valve to get the goal open degree.

(*2) “Target TPS voltage for ISC” stands for “Target Throttle Position Sensor voltage for Idle Speed Control.” ECM controls the engine idle speed by using throttle valve attached TPS. This target voltage is used by ECM to achieve the goal open degree of the throttle valve at idle speed.

(*3) “Ref. TPS voltage” stands for “Reference Throttle Position Sensor voltage.” This item shows the criterion output voltage of TPS. This value is used to detect the TPS output voltage during engine operation.

(*4) “Ref. acc. pos. sensor voltage” stands for “Reference accelerator position sensor voltage.”

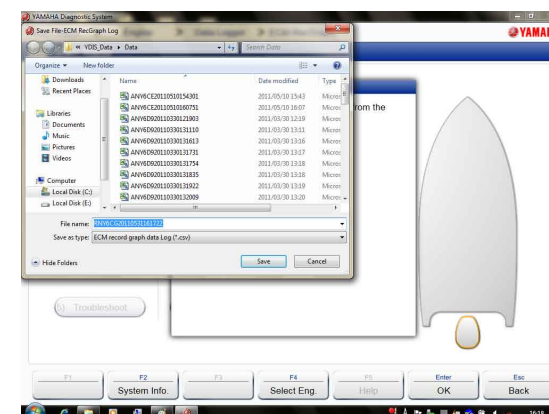
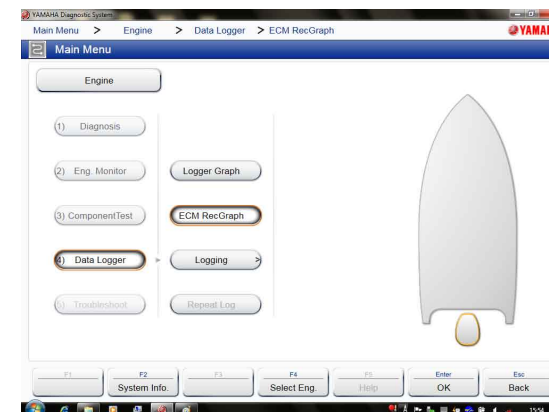
This item shows the criterion output voltage of Accelerator position sensor. This value is used to detect the Accelerator position sensor output voltage when the remote control throttle lever opens.

1. Display the 3rd-level menu.
2. Click the [ECM RecGraph] or [OK] button, or press the [Enter] key on your keyboard.

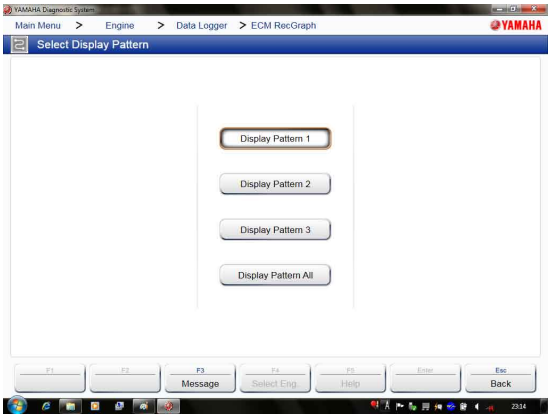
TIP:

- When a problem occurs, an error message appears. Follow the instructions on screen.
- When multiple engines are selected, an engine selection request message appears. Follow the instructions on screen.
- Some items may not be available depending on the model of the outboard motor.
- When there is no data stored in the ECM, or when the data saved is corrupted, an error message appers.

3. The **File Save** window appears.
4. Click the [Save] button to save data.



5. The **Select Display Pattern** screen is displayed.
6. Select the [Display Pattern] button by either clicking it or pressing the up or down arrow keys on your keyboard, and then press the [Enter] key.



Items using Display pattern 1

Item
Engine speed
APS 1
TPS 1
Target TPS voltage

Items using Display pattern 2

Item
APS 1
APS 2
TPS 1
TSP 2

Items using Display pattern 3

Item
Engine speed
Target TPS voltage
Target TPS voltage for ISC

7. The graph screen is displayed.

TIP:

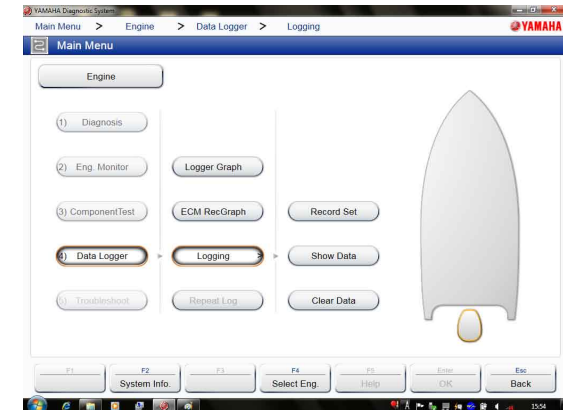
- You can change the display values and display colors. See “[Setting the graph properties.](#)”
- Click the [x 2] or [x 4] buttons or press the [2] or [4] key on your keyboard to double the X axis (time).
- Click the [/2] or [/4] buttons or press the [Shift]+[2] or [4] keys to cut the scale of the X axis by half.
- Click the [<] or [>] buttons or press the right or left arrow keys to move the guidelines (the red lines) position one gradient in the relevant direction. The figures for the position that matches the guidelines (the red lines) appear at the top right of the table.
- Click the [<<] or [>>] button, or press [Shift] + the left or right arrow keys to move the position of the end guidelines (the red lines) in the relevant direction.
- Click the [All] button or press the space bar to display all saved data on screen.
- Click the [Reset] button to reset the saved data to the default values.



4-3. Logging

Connect a computer and set the items to record to carry out data logging using the adapter.

- 1.** Display the 3rd-level menu.
- 2.** Click the [Logging] button in the 3rd-level menu or press the [Enter] or right arrow key on your keyboard.
- 3.** The 4th-level menu is displayed.



■ Clearing data from the adapter

To record data on the adapter, you must delete all current data stored on the adapter.

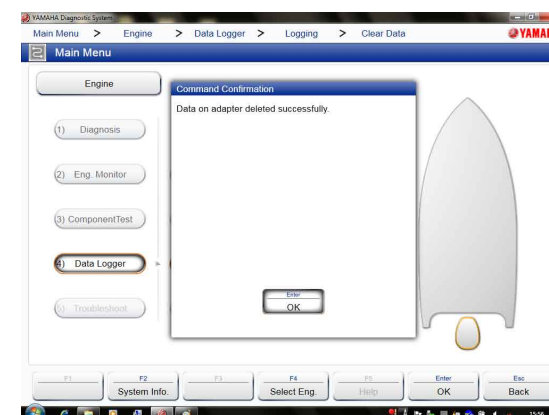
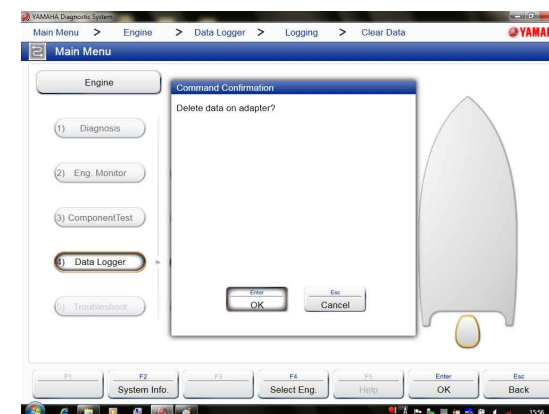
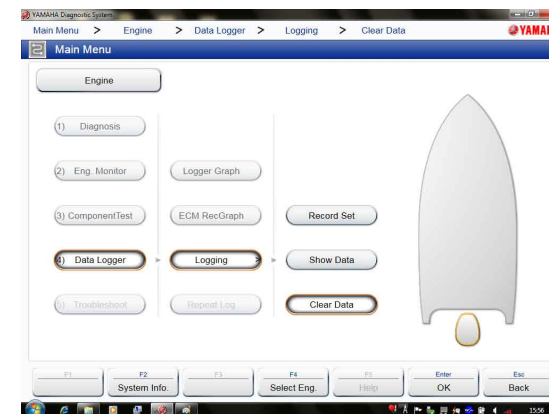
1. Display the 4th-level menu.
2. Select the [Clear Data] button by either clicking it or pressing the up or down arrow keys on your keyboard, and then press the [Enter] key.

3. A confirmation message appears.

4. Click the [OK] button or press the [Enter] key on your keyboard.

5. A completion message appears.

6. Click the [OK] button or press the [Enter] key on your keyboard.



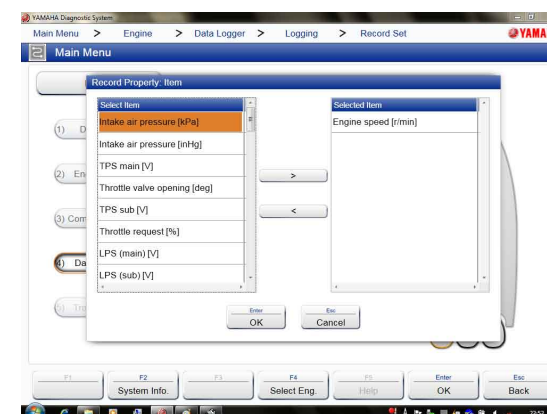
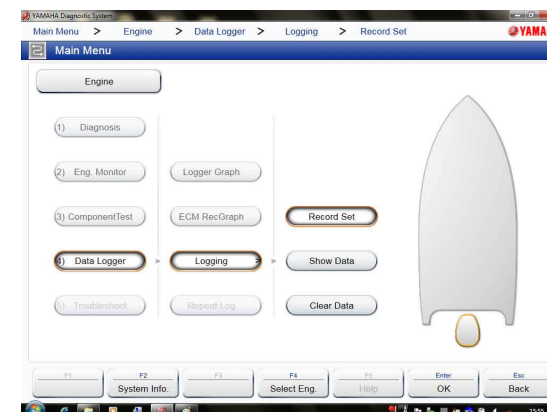
■ Record Setting

After configuring recording properties (number of items, number of engines, recordable time, sampling interval, comments), record the data on the adapter.

1. Display the 4th-level menu.
2. Click the [Record Set] button or press the [Enter] key on your keyboard.
3. The **Record Property: Item** window is displayed.
4. Select the item that you wish to record by either clicking it or pressing the up and down arrow keys on your keyboard.

TIP:

By default, only “Engine speed [r/min]” is displayed in the Selected Item column.



5. Click the [>] button or press the space bar on your keyboard to move the item to the Selected Item column.

6. Click the [OK] button or press the [Enter] key on your keyboard.

TIP: _____

Click the [>] button or press the space bar on your keyboard to change the selected status back to unselected.

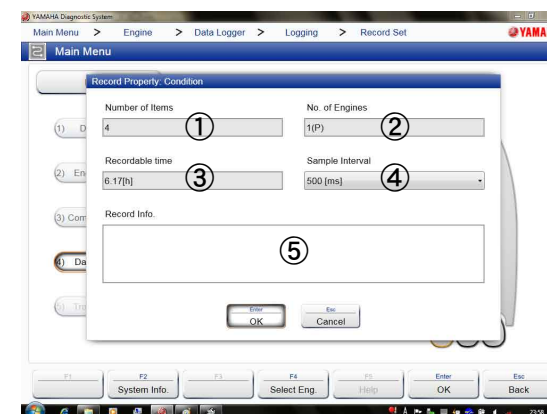
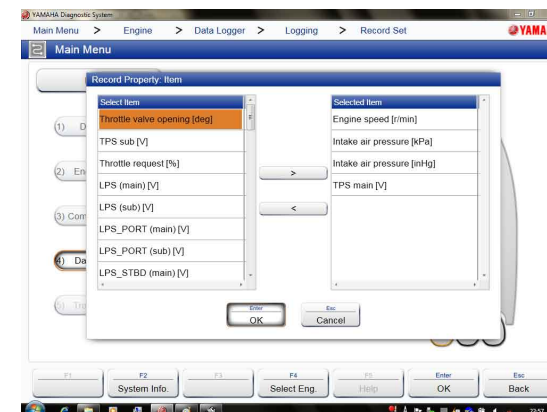
7. The **Record Property: Condition** window is displayed.

8. Select a sampling interval to record data.

9. Click the [OK] button or press the [Enter] key on your keyboard.

TIP: _____

- When connected via CAN-Line, numbers of engines and engine positions (P, C, S) are displayed. When connected via K-Line, only numbers of engines are displayed.
- When connected via K-Line, the sampling interval you can select varies according to the number of items you are monitoring: fastest can be selected when only 1 item is monitored, and 100 ms can be selected when 2 to 8 items are monitored.
- To confirm all actions, set the sampling interval to a long time, and to confirm details, set this to a short time.
- Recordable time differs depending on set conditions.

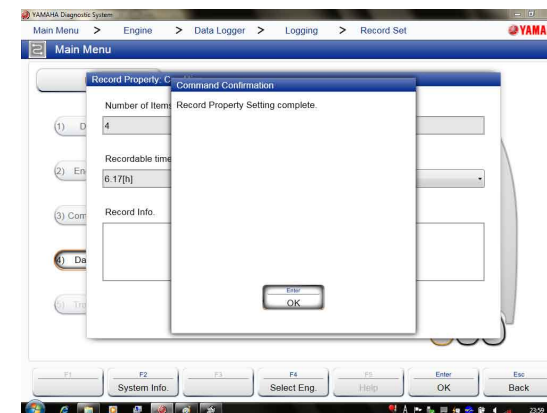


- ① Number of Items
- ② Number of Engines
- ③ Recordable time
- ④ Sampling Interval
- ⑤ Comment

- 10.** A completion message appears.
- 11.** Click the [OK] button or press the [Enter] key on your keyboard.
- 12.** Start the engine and disconnect the USB cable between the adapter and computer to set the system in ready-to-record state.
- 13.** Check that a red light is blinking.
- 14.** The system stops logging at a predetermined time, or when the USB cable is connected to the adapter again.

TIP: _____

- If removing the USB cable, then replace the adapter cap to prevent water from entering.
- Removing the USB cable means the adapter will enter recording status, and connecting the USB cable will end this status.
- If the engine speed is 500 r/min or less, then 5 samples will be recorded then recording stopped. However, because this is still in recording status, if the engine speed increases to 500 or more, recording will start again.
- During operation, the adapter is supplied power from the engine. If the engine is stopped while the adapter is recording, then the rechargeable battery within will perform a backup. (Guaranteed for 48 hours with the battery charged for an hour)
- If the internal battery becomes depleted, recorded data will be deleted. Accordingly, before this happens save the data or connect the adapter to the engine with the engine ON and recharge the battery.
- If recording status is ended, then as long as the data within the adapter is not deleted, the adapter may not record new data.



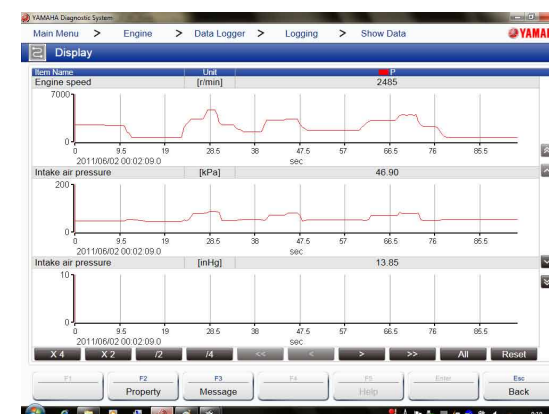
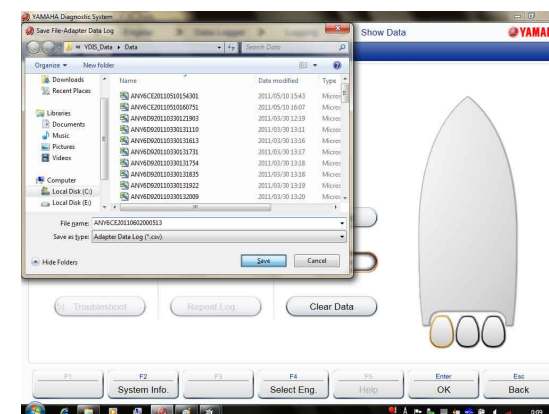
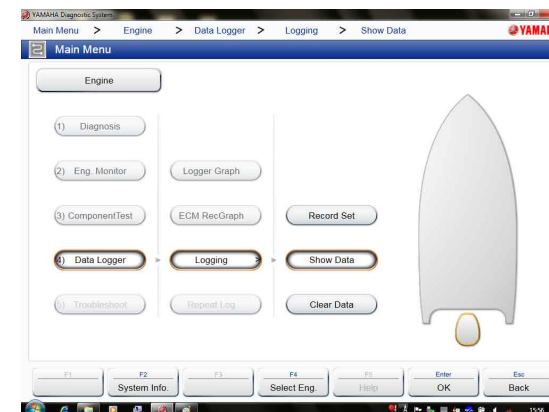
■ Displaying data in a graph

You can read data from the adapter and display it on the computer screen.

1. Display the 4th-level menu.
2. Select the [Show Data] button by either clicking it or pressing the up or down arrow keys on your keyboard, and then press the [Enter] key.

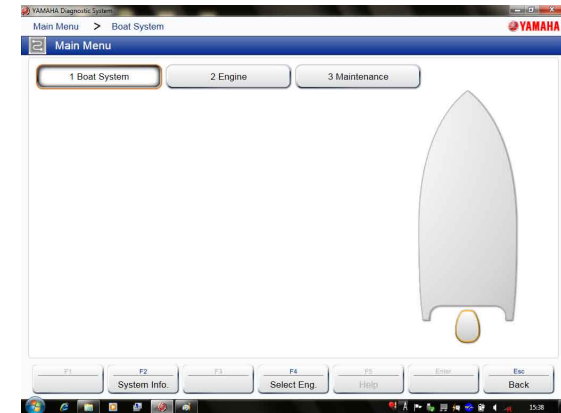
3. The **Save File** window is displayed.
4. Data name recorded on the adapter is displayed as a file name.
5. Click the [Save] button or press the [Enter] key on your keyboard.

6. Data is displayed in a graph.



Boat System

1. Display the **Main Menu** screen.
2. Click the [1 Boat System] button or press the [1] or [Enter] key on your keyboard.
3. The Boat System menu is displayed.



1. Tilt limiter

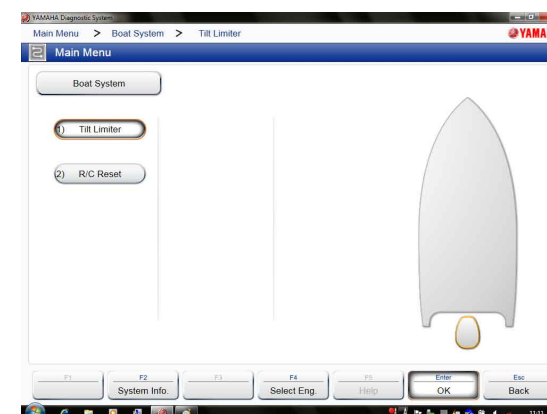
■ Setting the tilt limiter

NOTICE

- Make sure the outboard motor is mounted in the proper position. See Rigging Guide or Service Manual.
- Make sure to keep the clearance of 50.8 mm (2.0 in) or more between the outboard motor and the motor well.
- For two or more outboard motors, make sure there is enough clearance between units when tilted- or trimmed-up outboard motor is steered.
- Pay attention to your surroundings.

You can set the position of the motor (V8 models only) where the tilt limiter is activated. The tilt limiter allows the tilt-up action to be halted at a set angle, preventing the top cowling from coming into contact with the motor well when the outboard motor is tilted up.

1. Stop the engine.
2. Fully tilt the outboard motor down.
3. Display the Boat System menu.
4. Click the [1) Tilt Limiter] button in the 2nd-level menu or press the [1], [Enter], or right arrow key on your keyboard.



5. Tilt the outboard motor up using the PTT switch on the bottom cowling to decide the position where the tilt limiter is activated.

NOTICE

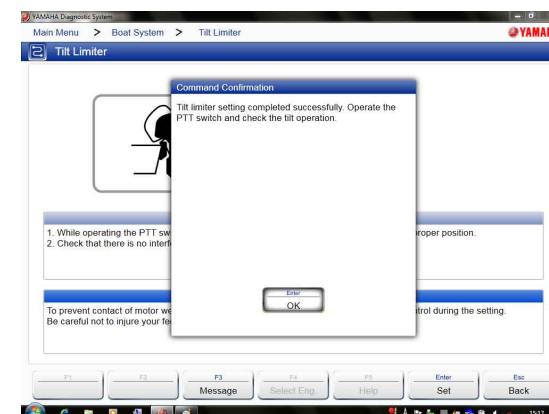
Do not use the PTT switch on the Digital Electronic Control during the tilt limiter setting to avoid interference between the motor well and the cowling.

6. Recheck that there is no interference with the cowling.
7. Click the [Set] button or press the [Enter] key on your keyboard.

TIP:

- When reconfiguring the tilt limiter setting, the [Next] button will appear instead of the [Set] button.
- When setting the tilt limiter, take into account that the outboard motor actually stops at the position slightly lower than the corresponding tilt limiter setting angle.
- Set the tilt limiter setting angle within the setting angle range (approximately 53 to 66 degrees) where the tilt stop lever can be engaged.

8. A setting complete confirmation message appears.
9. Click the [OK] button or press the [Enter] key on your keyboard.

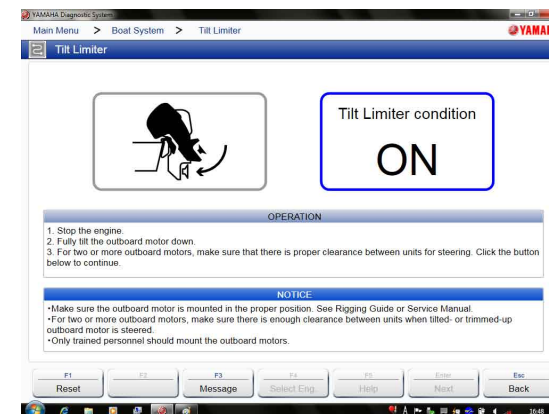


10. The tilt limiter setting has been completed.

11. Check that the tilt limiter functions properly and the tilt stop lever locks in place.

TIP: _____

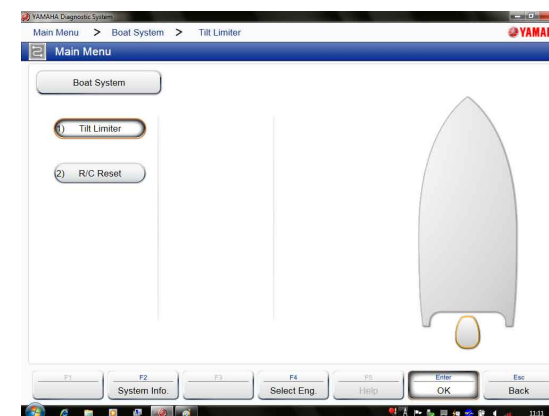
If an error occurs while an item is being tested, an error message appears. Follow the instructions on screen.



■ Resetting the tilt limiter setting

Clear the tilt limiter setting.

- 1.** Display the Boat System menu.
- 2.** Click the [1) Tilt Limiter] button in the 2nd-level menu or press the [1], [Enter], or right arrow key on your keyboard.



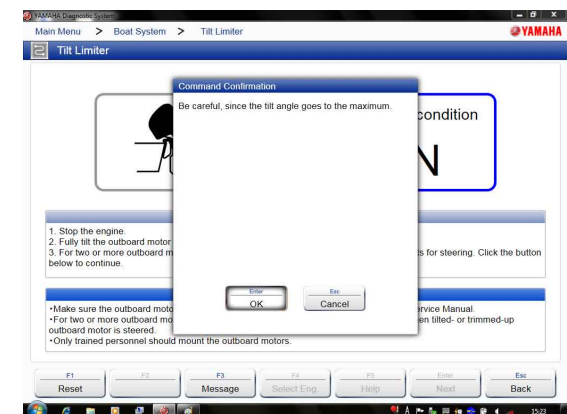
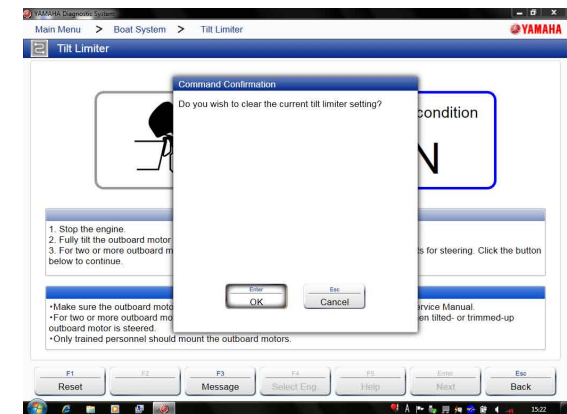
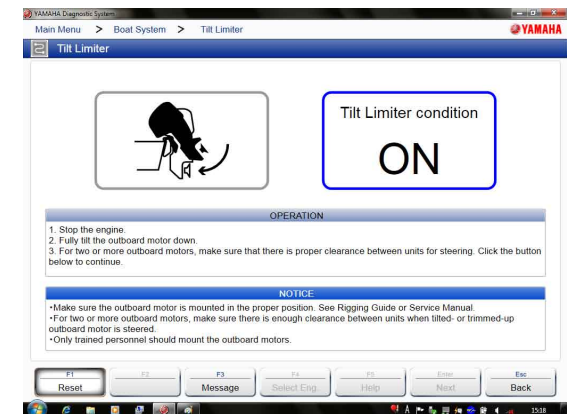
3. Click the [Reset] button or press the [F1] key on your keyboard.

4. A confirmation message appears.

5. Click the [OK] button or press the [Enter] key on your keyboard.

6. A caution message appears.

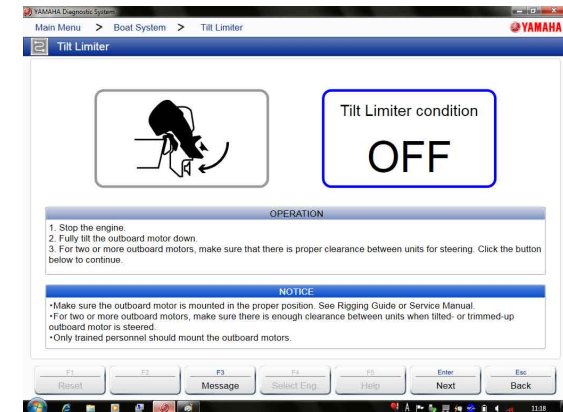
7. Click the [OK] button or press the [Enter] key on your keyboard.



8. The tilt limiter setting has been cleared.

TIP:

Click the [Next] button or press the [Enter] key on your keyboard to move to the setting screen.

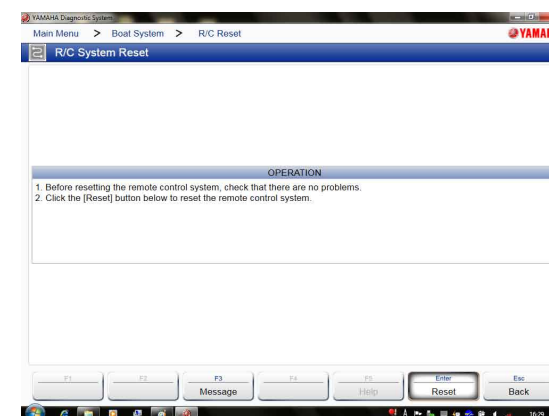
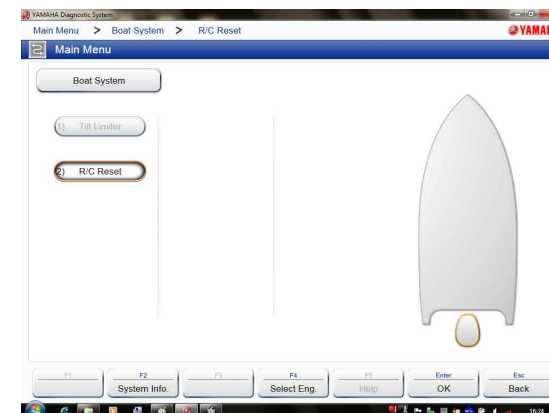


2. Digital Electronic Control System

■ Resetting the Digital Electronic Control System

This command initializes identification between the outboard motor and the Digital Electronic Control. Perform Digital Electronic Control System Reset when replacing the Digital Electronic Control ECM or engine ECM.

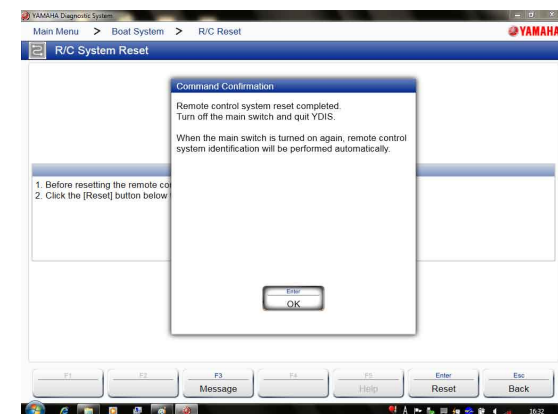
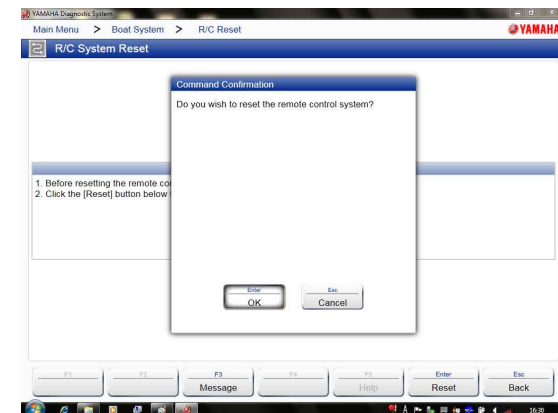
1. Display the Boat System menu.
2. Click the [2) R/C Reset] button in the 2nd-level menu or press the [2], [Enter], or right arrow key on your keyboard.
3. Click the [Reset] button or press the [Enter] key on your keyboard.



4. A confirmation message appears.
5. Click the [OK] button or press the [Enter] key on your keyboard.
6. A confirmation message appears.
7. Click the [OK] button or press the [Enter] key on your keyboard.
8. Turn the engine start switch to OFF, and then remove the communication harness from the Digital Electronic Control.

TIP: _____

Wait a minimum of 10 seconds after turning the engine start switch OFF to allow the engine ECM to complete it's power OFF cycle. After 10 seconds, turn the engine start switch ON, the engine ECM and Digital Electronic Control ECM will automatically identify and connect.



Maintenance

1. Record of engine oil change

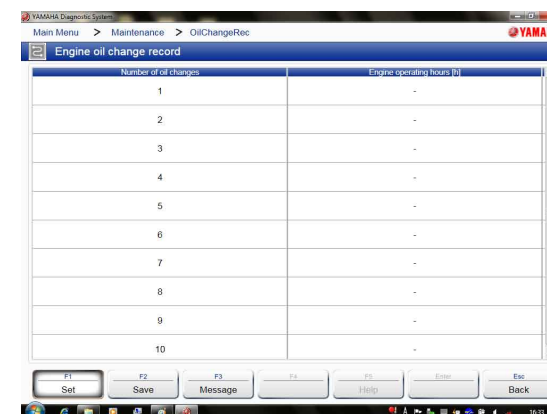
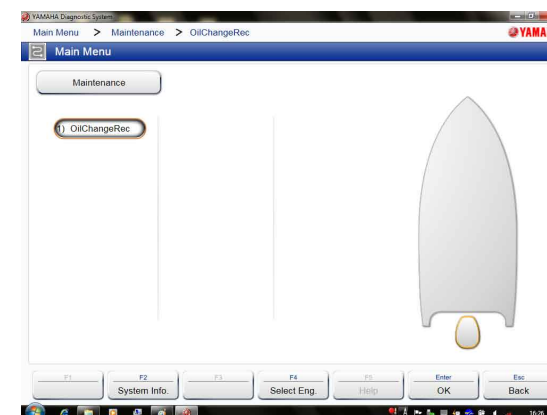
Engine hours at the time of maintenance (oil change) can be recorded.

Note that you cannot delete an oil change record once it has been recorded.

1. Display the Maintenance menu.
2. Click the [1) OilChangeRec] button in the 2nd-level menu or press the [1], [Enter], or right arrow key on your keyboard.

3. The **Engine oil change record** screen is displayed.

4. Click the [Set] button or press the [F1] key on your keyboard.

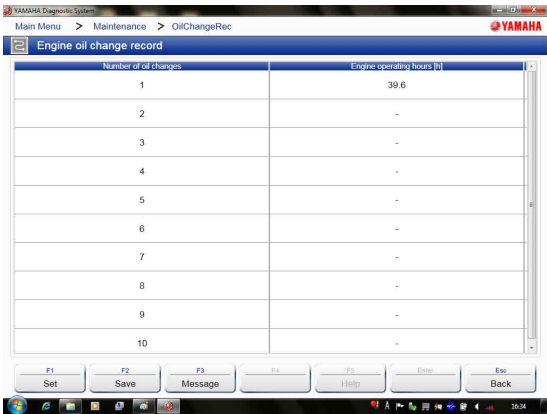
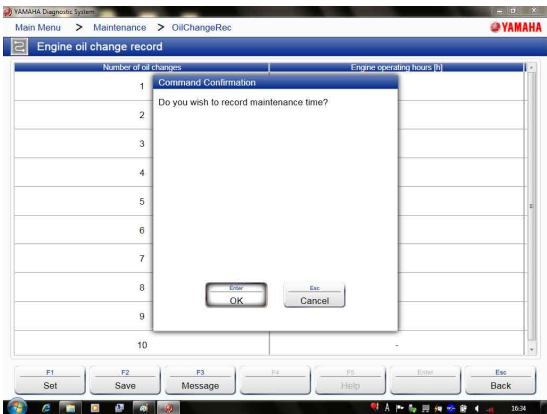


- 5. A confirmation message appears.
- 6. Click the [OK] button or press the [Enter] key on your keyboard.

TIP: _____
Data cannot be deleted once recorded.

- 7. Current operating hours recorded in the engine will be displayed.

TIP: _____
Up to 10 items can be displayed. Once this limit has been reached, the oldest item is removed from the list.

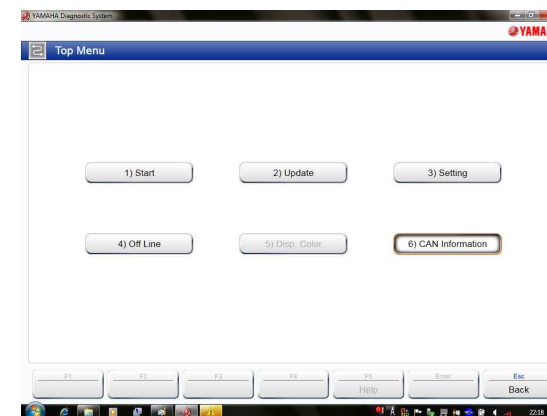


CAN Information

Displays the names of CAN bus devices connected to a CAN system and bus status (bus load ratio, number of error frames, etc).

When connected via K-Line, this function is not available.

1. Display the **Top Menu** screen.
2. Click the [6) CAN Information] button or press the [6] or [Enter] key on your keyboard.
3. The **Bus Monitor** screen is displayed.

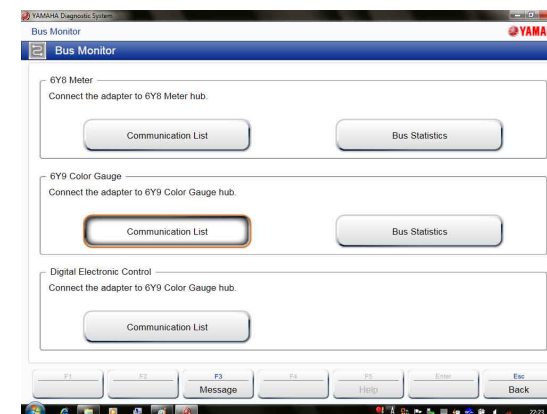


1. Communication List

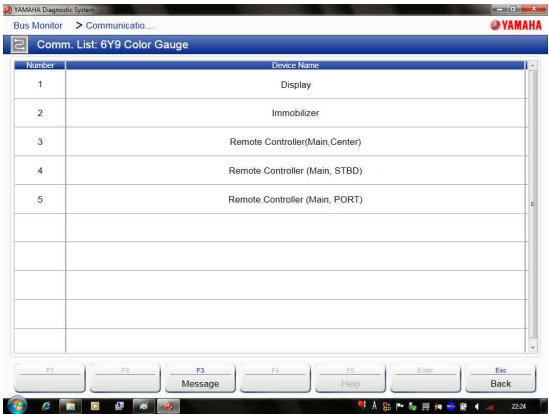
1. Display the **Bus Monitor** screen.
2. Select the hub that the adapter is connected to.
3. Click the [Communication List] button or press the [Enter] key on your keyboard.

TIP: _____

The screen capture on the right shows the case where 6Y9 Color Gauge system is used.



4. The name of the connected device is displayed.



TIP:

- The name of the selected bus device is displayed as shown in the list below.
- If the system cannot recognize the connected device, “Unknown Device” appears on the display.

Connected device	Bus		
	6Y8 Meter system	6Y9 Color Gauge system	Digital Electronic Control
Engine/Digital Electronic Control	Engine	Remote Controller (Main, PORT)	Remote Controller (Main, PORT)
		Remote Controller (Sub, PORT)	Remote Controller (Sub, PORT)
		Remote Controller (Main, Center)	Remote Controller (Main, Center)
		Remote Controller (Sub, Center)	Remote Controller (Sub, Center)
		Remote Controller (Main, STBD)	Remote Controller (Main, STBD)
		Remote Controller (Sub, STBD)	Remote Controller (Sub, STBD)
Engine	Engine	—	—
Tachometer	Tachometer	—	—
Speedometer	Speedometer	—	—
Fuel Management Meter	Fuel Management Meter	—	—
Speed/Fuel Meter	Speed/Fuel Meter	—	—
6Y9 Color Gauge	—	Display	—
Analog Gauge Interface	Analog Gauge Interface	Analog Gauge Interface #	—
Gateway	—	NMEA2000 Gateway	—
Idle Controller	Idle Controller	Idle Controller	—
Multisensor	Multisensor	Multisensor	—
Checker	Checker	Checker	—
Y-COP	Immobilizer	Immobilizer	—
Other than the above	Unknown Device	Unknown Device	Unknown Device

“—” indicates that there is nothing displayed on the screen.

TIP:

- If the selected bus differs from the bus to be connected, it will be displayed as shown in the list.
- When device information is not received due to communication errors or other causes, “No Device” is displayed.

Connected device	Bus		
	6Y8 Meter system	6Y9 Color Gauge system	Digital Electronic Control
Engine/Digital Electronic Control	Engine	Engine	—
Tachometer	—	Gauge	—
Speedometer	—	Gauge	—
Fuel Management Meter	—	Gauge	—
Speed/Fuel Meter	—	Gauge	—
6Y9 Color Gauge	Gauge	—	—
Analog Gauge Interface	Analog Gauge Interface	Analog Gauge Interface #	—
Gateway	Gateway	—	—
Idle Controller	Idle Controller	Idle Controller	—
Multisensor	Multisensor	Multisensor	—
Checker	Checker	Checker	—
Y-COP	Immobilizer	Immobilizer	—
Other than the above	Unknown Device	Unknown Device	Unknown Device

“—” indicates that there is nothing displayed on the screen.

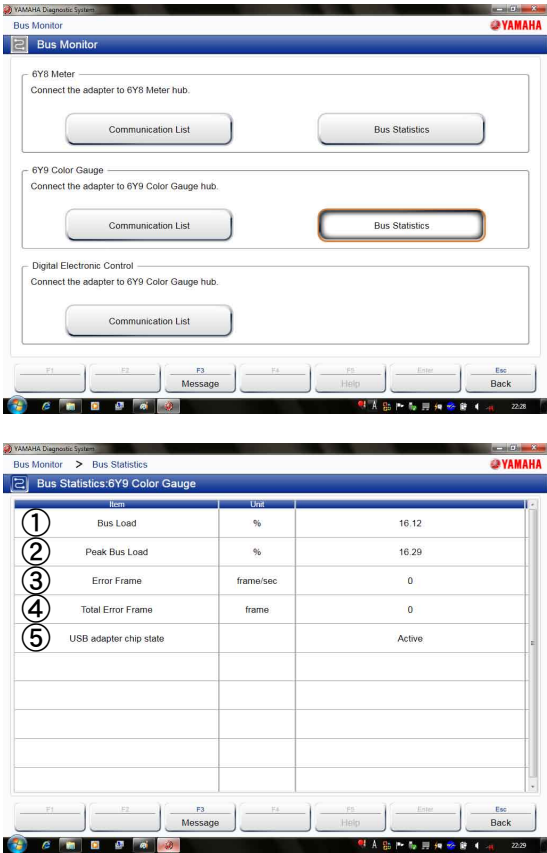
2. Bus Statistics

- 1. Display the **Bus Monitor** screen.
- 2. Select the bus that the adapter is connected to.
- 3. Click the [Bus Statistics] button or press the [Enter] key on your keyboard.

TIP: _____
The screen capture on the right shows the case where 6Y9 Color Gauge system is used.

- 4. The **Bus Statistics** screen is displayed.

TIP: _____
Connect devices with a bus load of 40% or less.



- ① Displays the bus load ratio of connected devices per second.
- ② Displays peak bus load.
- ③ Displays error frames per second.
- ④ Displays total error frames.
- ⑤ Displays adapter chip state.

TIP:

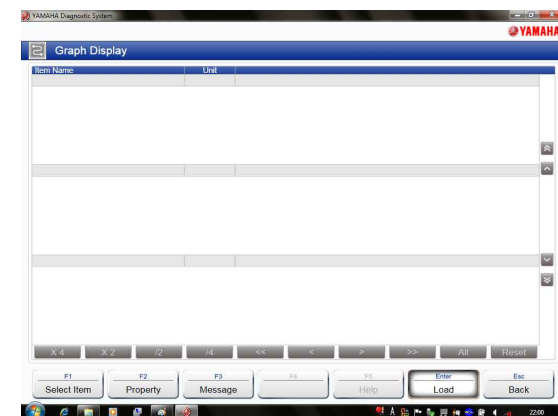
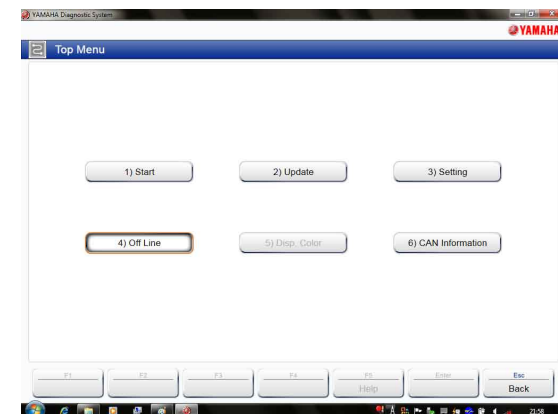
If the selected bus differs from the bus to be connected, it will be displayed as shown in the list below.

System	Bus	Connection	Displays of connection errors
6Y8 Meter	6Y8 Meter system	OK	—
	6Y9 Color Gauge system	Wrong	The screen title shows “6Y8 Meter” but the displayed value is the value for 6Y9 Color Gauge bus connection.
6Y9 Color Gauge	6Y8 Meter system	Wrong	The screen title shows “6Y9 Color Gauge” but the displayed value is the value for 6Y8 Meter bus connection.
	6Y9 Color Gauge system	OK	—

Off-line

You can view graph data of Engine Monitor, ECM Record graph, and Logging previously saved on the computer even when not connected to the ECM.

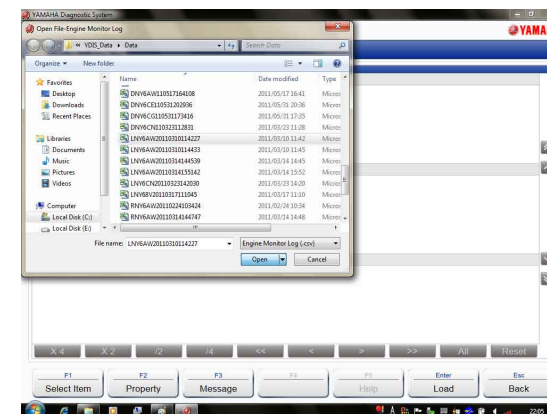
- 1.** Display the **Top Menu** screen.
- 2.** Click the [4) Off Line] button or press [4] or [Enter] key on your keyboard.
- 3.** The **Graph Display** screen appears.
- 4.** Click the [Load] button or press the [Enter] key on your keyboard.



5. The **Open File** window appears.
6. Select the file that contains the graph data.
7. Click the [Open] button or press the [Enter] key on your keyboard.

TIP:

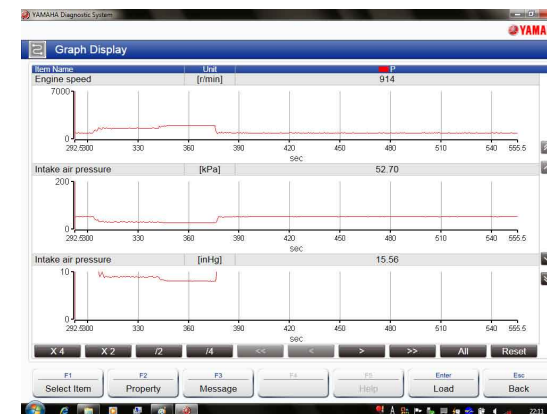
- Data with file names starting with ANY, LNY, or RNY prefix can be displayed on the screen.
- If you select data that cannot be displayed during off-line operation, an error message appears. Follow the instructions on screen.
- Click the [Cancel] button or press the [Esc] key on your keyboard to cancel the file selection.



8. The selected graph data is displayed.

TIP:

You can change the graph display settings.



Appendix

1. Setting the desktop area

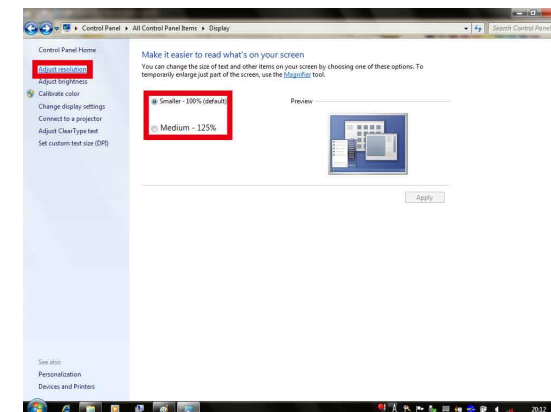
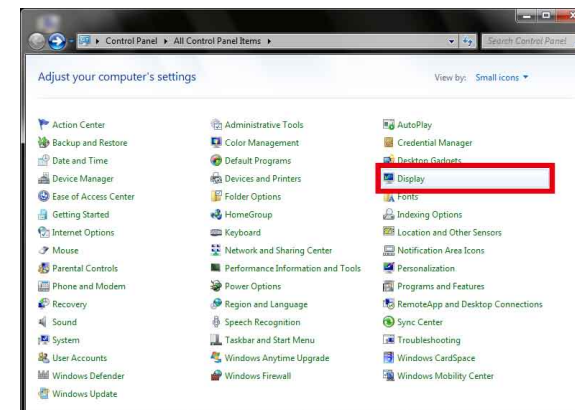
NOTICE

Do not change the screen size when using this program.

1. Click the [Start] button on the Windows taskbar, select settings, and open the control panel.
2. Double-click the Display in the center of the control panel.
3. The Display setting window is displayed.
4. Click “Adjust resolution.”

TIP:

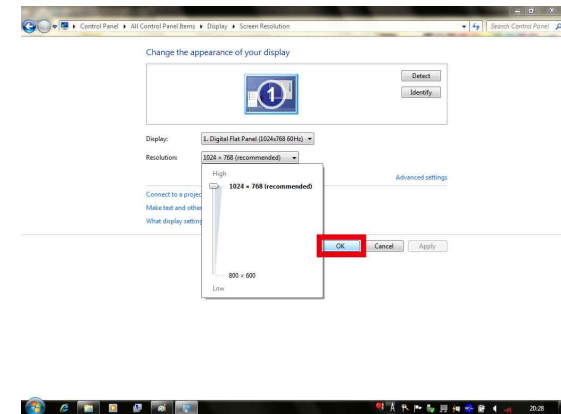
The screen resolution can also be adjusted by selecting Smaller or Medium in the window.



5. A window to adjust screen resolution appears.
6. Move the slider bar to adjust the resolution.
7. Click the [OK] button to set the desktop area.

TIP: _____

Click the [NO] button to cancel the desktop area setting.



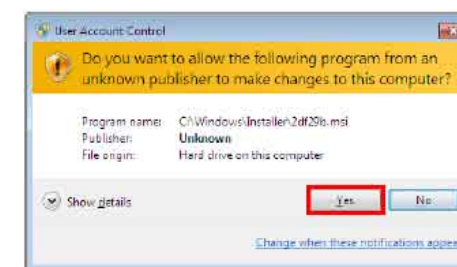
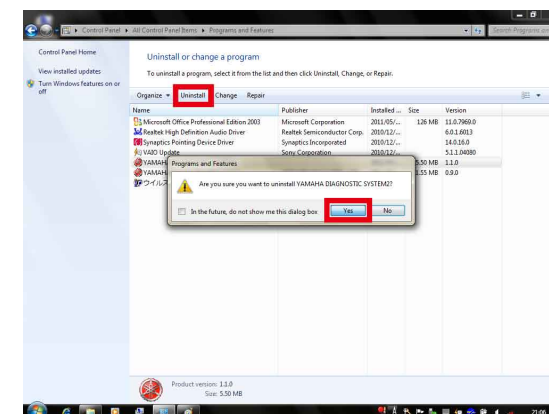
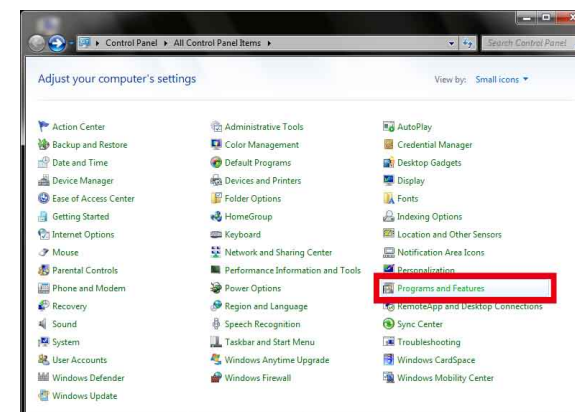
2. Uninstalling the YAMAHA Diagnostic System

Use the following procedure to uninstall the YAMAHA Diagnostic System.

1. Close all programs before starting the uninstaller.
2. Click the [Start] button on the Windows taskbar, select settings, and open the control panel.
3. Click the Programs and Features in the control panel.
4. Select “YAMAHA DIAGNOSTIC SYSTEM 2” and click “Uninstall.”
5. Click [Yes] button to uninstall the YAMAHA Diagnostic System.

TIP:

- Click the [No] button to cancel the uninstall.
- If you are using Windows Vista or Windows 7 and the **User Account Control** dialog box appears, click [Yes] to continue.



3. Troubleshooting

Error content	Cause	Action
Communication cable related error occurs.	Engine start switch is turned to OFF.	Turn the engine start switch to ON.
	Communication cable is disconnected.	Connect communication cable between the computer's communication port and the communication coupler of the outboard motor or hub.
	Battery is disconnected from the outboard motor.	Connect battery to outboard motor.
	The battery voltage is below 12 V.	Connect battery of 12 V or higher.
	The USB driver has not been installed.	Install the USB driver.
Application does not start.	The hardware does not meet the requirements to operate this application.	Use a computer that meets the specified hardware requirements.
	YdisUI.exe is not installed in application directory.	If YdisUI.exe is not found in the application directory, install the application again.
	Other application (Service tool) is already in operation.	Quit the application in operation, since two applications (Service tool) cannot be operated simultaneously.
Application related error occurs.	Error message "Program file or Database file is not installed properly. Please install again." is displayed.	Install program file or database file again.
Database related error occurs.	Error message "Database files are not installed properly." is displayed.	Update database again.
	Error message "System file not found #####.###." is displayed.	The database is not applicable to communication with ECM. Update database to correspond to ECM.
Incorrect fonts on screen	The computer language does not correspond to the application.	Use a computer that operates the required operating system.
Stationary or active tests cannot be ended even by clicking [Cancel].	[Execute] and [Cancel] buttons have been clicked more than necessary, and the ECM or computer does not operate properly.	"Turn off your computer. Turn the engine start switch to OFF and reset the ECM."

Functions by model (Outboard motor)

Diagnosis

		A	B	C	D	E	F	G	H	I	J	K	L	M
	Engine type	HPDI 2596 cm ³	HPDI 3342 cm ³	L3 747 cm ³	L4 1741 cm ³	1: L4/1741 cm ³ 2: L4/1596 cm ³ 3: L4/996 cm ³ 4: L3/747 cm ³	L4 2670 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 Bass 4169 cm ³	V6 4169 cm ³	V8 5330 cm ³	V8 5330 cm ³
	Model name	(L)Z150P Z150Q Z175G Z175H (L)Z200N Z200P Z200Q	Z200R Z225H Z240A Z240B (L)Z250D Z250F (L)Z300A Z300B	F40F F30B	F(L)115A (-’00)	1: F(L)115A (’01–) 2: F75B, F75C, F80B, F80C, F90B, F100D 3: F50F, FT50G, F60C, FT60D, F70A 4: F40D, F40G	F(L)150A F(L)150B	F(L)200A F(L)200B F(L)225A	F(L)200C F(L)225B F225C F(L)250A F(L)250G	F(L)250B	F200D F225D F225G F250C F250F F275A	F(L)225F F(L)250D F(L)300B	F(L)300A (’08–’10MY) F(L)350A (’08–’10MY)	F(L)300A (’11MY) F(L)350A (’11MY)
Item	Diagnosis code													
Pulser coil	13	○	○		○	○	○	○	○	○	○	○	○	○
Crank position sensor	14	○	○											
Thermo sensor	15	○	○	○	○	○	○	○	○	○	○	○	○	○
Knock sensor	17					○			○	○	○	○		
TPS	18	○	○	○	○	○	○	○						
Battery voltage	19	○	○	○	○	○	○	○	○	○	○	○	○	○
Atmospheric pressure sensor	22	○	○											
Air temperature sensor	23	○	○	○	○	○	○	○	○	○	○	○	○	○
Cam position sensor (EX)	24								○	○	○	○	○	○
Fuel pressure sensor	25	○	○											
Injector	26	○	○											
Water in fuel filter	27	○	○	○				○ (with water detection switch)		○	○	○	○	○
Shift position switch	28	○	○	○	○	○	○	○	○		○			
Air pressure sensor	29			○	○	○	○	○	○	○	○	○	○	○
Intake air passage	37			○	○	○	○	○	○	○	○	○	○	○
Oil pressure sensor	39						○	○	○	○	○	○	○	○
Engine shut-off switch	44	○	○	○	○	○	○	○	○	○	○	○	○	○
Shift cut-off switch	45						○	○	○		○			
Thermoswitch	46						○	○	○	○	○		○	
Overcooling	49			○		○								
VCT (S bank)	68								○	○	○	○	○	○
VCT (P bank)	69								○	○	○	○	○	○
Cam position sensor(S bank IN)	71								○	○	○	○	○	○
Cam position sensor(P bank IN)	72								○	○	○	○	○	○
OCV (S bank)	73								○	○	○	○	○	○
OCV (P bank)	74								○	○	○	○	○	○
PTT sensor	83												○	○
IDM	85												○	○

Functions by model (Outboard motor)

		A	B	C	D	E	F	G	H	I	J	K	L	M
	Engine type	HPDI 2596 cm ³	HPDI 3342 cm ³	L3 747 cm ³	L4 1741 cm ³	1: L4/1741 cm ³ 2: L4/1596 cm ³ 3: L4/996 cm ³ 4: L3/747 cm ³	L4 2670 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 Bass 4169 cm ³	V6 4169 cm ³	V8 5330 cm ³	V8 5330 cm ³
	Model name	(L)Z150P Z150Q Z175G Z175H (L)Z200N Z200P Z200Q	Z200R Z225H Z240A Z240B (L)Z250D Z250F (L)Z300A Z300B	F40F F30B	F(L)115A (-’00)	1: F(L)115A (’01–) 2: F75B, F75C, F80B, F80C, F90B, F100D 3: F50F, FT50G, F60C, FT60D, F70A 4: F40D, F40G	F(L)150A F(L)150B	F(L)200A F(L)200B F(L)225A	F(L)200C F(L)225B F225C F(L)250A F(L)250G	F(L)250B	F200D F225D F225G F250C F250F F275A	F(L)225F F(L)250D F(L)300B	F(L)300A (’08–’10MY) F(L)350A (’08–’10MY)	F(L)300A (’11MY) F(L)350A (’11MY)
Item	Diagnosis code													
Immobilizer	86			○		○ (for models equipped with immobilizer)	○ (for models equipped with immobilizer)				○ (for models equipped with immobilizer)	○		○
TPS (ETV)	124								○	○	○	○	○	○
TPS (ETV)	125								○	○	○	○	○	○
TPS (ETV)	126								○	○	○	○	○	○
TPS (ETV)	127								○	○	○	○	○	○
TPS (ETV)	128								○	○	○	○	○	○
APS (ETV)	131								○		○			
APS (ETV)	132								○		○			
APS (ETV)	133								○		○			
APS (ETV)	134								○		○			
APS (ETV)	135								○		○			
SPS	146									○		○	○	○
SPS	147									○		○	○	○
SPS	148									○		○	○	○
SPS	149									○		○	○	○
SPS	150									○		○	○	○
SPS	153									○		○	○	○
SPS	154									○		○	○	○
SPS	155									○		○	○	○
Engine-R/C communication	156									○		○	○	○
Engine-R/C communication	157									○		○	○	○
Remote control system	160									○		○	○	○
Remote control system	161									○		○	○	○
Remote control system	162									○		○	○	○
Remote control system	163									○		○	○	○
Remote control system	164									○		○	○	○
Remote control system	165									○		○	○	○
Remote control system	166									○		○	○	○
Remote control system	167									○		○	○	○
Remote control system	168									○		○	○	○
Remote control system	169									○		○	○	○
Remote control system	170									○		○	○	○
Remote control system	171									○		○	○	○

Functions by model (Outboard motor)

		A	B	C	D	E	F	G	H	I	J	K	L	M
	Engine type	HPDI 2596 cm ³	HPDI 3342 cm ³	L3 747 cm ³	L4 1741 cm ³	1: L4/1741 cm ³ 2: L4/1596 cm ³ 3: L4/996 cm ³ 4: L3/747 cm ³	L4 2670 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 Bass 4169 cm ³	V6 4169 cm ³	V8 5330 cm ³	V8 5330 cm ³
	Model name	(L)Z150P Z150Q Z175G Z175H (L)Z200N Z200P Z200Q	Z200R Z225H Z240A Z240B (L)Z250D Z250F (L)Z300A Z300B	F40F F30B	F(L)115A (-’00)	1: F(L)115A (’01–) 2: F75B, F75C, F80B, F80C, F90B, F100D 3: F50F, FT50G, F60C, FT60D, F70A 4: F40D, F40G	F(L)150A F(L)150B	F(L)200A F(L)200B F(L)225A	F(L)200C F(L)225B F225C F(L)250A F(L)250G	F(L)250B	F200D F225D F225G F250C F250F F275A	F(L)225F F(L)250D F(L)300B	F(L)300A (’08–’10MY) F(L)350A (’08–’10MY)	F(L)300A (’11MY) F(L)350A (’11MY)
Item	Diagnosis code													
Remote control system	172									○		○	○	○
Remote control system	173									○		○	○	○
Remote control system	174									○		○	○	○
Remote control system	175									○		○	○	○
Remote control system	176									○		○	○	○
Remote control system	177									○		○	○	○
Remote control system	178									○		○	○	○
Remote control system	179									○		○	○	○
Remote control system	180									○		○	○	○
Remote control system	181									○		○	○	○
Remote control system	183									○		○	○	○
Remote control system	184									○		○	○	○
Remote control system	186									○		○	○	○
Remote control system	187									○		○	○	○
ETV	112								○	○	○	○	○	○
ETV	113								○	○	○	○	○	○
ETV	114								○	○	○	○	○	○
ETV	115								○	○	○	○	○	○
ETV	116								○	○	○	○	○	○
ETV	117								○	○	○	○	○	○
ETV	118								○	○	○	○	○	○
ETV	119								○	○	○	○	○	○
ETV	121								○	○	○	○	○	○
ETV	122								○	○	○	○	○	○
ETV	123								○	○	○	○	○	○
ETV	129								○	○	○	○	○	○
ETV	136								○	○	○	○	○	○
ETV	137								○	○	○	○	○	○
ETV	138								○	○	○	○	○	○
ETV	139								○	○	○	○	○	○
ETV	141								○	○	○	○	○	○
ETV	142								○	○	○	○	○	○
ETV	143								○	○	○	○	○	○
ETV	144								○	○	○	○	○	○
ETV	145								○	○	○	○	○	○

Diagnosis Record

		A	B	C	D	E	F	G	H	I	J	K	L	M
	Engine type	HPDI 2596 cm ³	HPDI 3342 cm ³	L3 747 cm ³	L4 1741 cm ³	1: L4/1741 cm ³ 2: L4/1596 cm ³ 3: L4/996 cm ³ 4: L3/747 cm ³	L4 2670 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 Bass 4169 cm ³	V6 4169 cm ³	V8 5330 cm ³	V8 5330 cm ³
	Model name	(L)Z150P Z150Q Z175G Z175H (L)Z200N Z200P Z200Q	Z200R Z225H Z240A Z240B (L)Z250D Z250F (L)Z300A Z300B	F40F F30B	F(L)115A (-’00)	1: F(L)115A (’01–) 2: F75B, F75C, F80B, F80C, F90B, F100D 3: F50F, FT50G, F60C, FT60D, F70A 4: F40D, F40G	F(L)150A F(L)150B	F(L)200A F(L)200B F(L)225A	F(L)200C F(L)225B F225C F(L)250A F(L)250G	F(L)250B	F200D F225D F225G F250C F250F F275A	F(L)225F F(L)250D F(L)300B	F(L)300A (’08–’10MY) F(L)350A (’08–’10MY)	F(L)300A (’11MY) F(L)350A (’11MY)
Item	Diagnosis code													
Pulser coil	13	○	○		○	○	○	○	○	○	○	○	○	○
Crank position sensor	14	○	○											
Thermo sensor	15	○	○	○		○	○	○	○	○	○	○	○	○
Knock sensor	17					○			○	○	○	○		
TPS	18	○	○	○		○	○	○						
Battery voltage	19	○	○	○		○	○	○	○	○	○	○	○	○
Atmospheric pressure sensor	22	○	○											
Air temperature sensor	23	○	○	○		○	○	○	○	○	○	○	○	○
Cam position sensor (EX)	24								○	○	○	○	○	○
Fuel pressure sensor	25	○	○											
Injector	26	○	○											
Water in fuel filter	27	○	○	○			○	○ (with water detection switch)	○	○	○	○	○	○
Shift position switch	28	○	○	○		○	○	○	○		○			
Air pressure sensor	29			○		○	○	○	○	○	○	○	○	○
Intake air passage	37			○		○	○	○	○	○	○	○	○	○
Oil pressure sensor	39						○	○	○	○	○	○	○	○
Engine shut-off switch	44								○					
Shift cut-off switch	45						○	○	○		○			
Thermoswitch	46						○	○	○	○	○		○	
Overcooling	49			○		○								
Memory data	59	○	○	○		○	○	○	○	○	○	○	○	○
Fuel pressure too low	62		○											
VCT (S bank)	68								○	○	○	○	○	○
VCT (P bank)	69								○	○	○	○	○	○
Cam position sensor(S bank IN)	71								○	○	○	○	○	○
Cam position sensor(P bank IN)	72								○	○	○	○	○	○
OCV (S bank)	73								○	○	○	○	○	○
OCV (P bank)	74								○	○	○	○	○	○
PTT sensor	83												○	○
IDM	85												○	○

Functions by model (Outboard motor)

		A	B	C	D	E	F	G	H	I	J	K	L	M
	Engine type	HPDI 2596 cm ³	HPDI 3342 cm ³	L3 747 cm ³	L4 1741 cm ³	1: L4/1741 cm ³ 2: L4/1596 cm ³ 3: L4/996 cm ³ 4: L3/747 cm ³	L4 2670 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 Bass 4169 cm ³	V6 4169 cm ³	V8 5330 cm ³	V8 5330 cm ³
	Model name	(L)Z150P Z150Q Z175G Z175H (L)Z200N Z200P Z200Q	Z200R Z225H Z240A Z240B (L)Z250D Z250F (L)Z300A Z300B	F40F F30B	F(L)115A (-’00)	1: F(L)115A (’01–) 2: F75B, F75C, F80B, F80C, F90B, F100D 3: F50F, FT50G, F60C, FT60D, F70A 4: F40D, F40G	F(L)150A F(L)150B	F(L)200A F(L)200B F(L)225A	F(L)200C F(L)225B F225C F(L)250A F(L)250G	F(L)250B	F200D F225D F225G F250C F250F F275A	F(L)225F F(L)250D F(L)300B	F(L)300A (’08–’10MY) F(L)350A (’08–’10MY)	F(L)300A (’11MY) F(L)350A (’11MY)
Item	Diagnosis code													
Immobilizer	86			○		○ (for models equipped with immobilizer)	○ (for models equipped with immobilizer)				○ (for models equipped with immobilizer)	○		○
TPS (ETV)	124								○	○	○	○	○	○
TPS (ETV)	125								○	○	○	○	○	○
TPS (ETV)	126								○	○	○	○	○	○
TPS (ETV)	127								○	○	○	○	○	○
TPS (ETV)	128								○	○	○	○	○	○
APS (ETV)	131								○		○			
APS (ETV)	132								○		○			
APS (ETV)	133								○		○			
APS (ETV)	134								○		○			
APS (ETV)	135								○		○			
SPS	146									○		○	○	○
SPS	147									○		○	○	○
SPS	148									○		○	○	○
SPS	149									○		○	○	○
SPS	150									○		○	○	○
SPS	153									○		○	○	○
SPS	154									○		○	○	○
SPS	155									○		○	○	○
Engine-R/C communication	156									○		○	○	○
Engine-R/C communication	157									○		○	○	○
Remote control system	160									○		○	○	○
Remote control system	161									○		○	○	○
Remote control system	162									○		○	○	○
Remote control system	163									○		○	○	○
Remote control system	164									○		○	○	○
Remote control system	165									○		○	○	○
Remote control system	166									○		○	○	○
Remote control system	167									○		○	○	○
Remote control system	168									○		○	○	○
Remote control system	169									○		○	○	○
Remote control system	170									○		○	○	○
Remote control system	171									○		○	○	○

		A	B	C	D	E	F	G	H	I	J	K	L	M
	Engine type	HPDI 2596 cm ³	HPDI 3342 cm ³	L3 747 cm ³	L4 1741 cm ³	1: L4/1741 cm ³ 2: L4/1596 cm ³ 3: L4/996 cm ³ 4: L3/747 cm ³	L4 2670 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 Bass 4169 cm ³	V6 4169 cm ³	V8 5330 cm ³	V8 5330 cm ³
	Model name	(L)Z150P Z150Q Z175G Z175H (L)Z200N Z200P Z200Q	Z200R Z225H Z240A Z240B (L)Z250D Z250F (L)Z300A Z300B	F40F F30B	F(L)115A (-’00)	1: F(L)115A (’01–) 2: F75B, F75C, F80B, F80C, F90B, F100D 3: F50F, FT50G, F60C, FT60D, F70A 4: F40D, F40G	F(L)150A F(L)150B	F(L)200A F(L)200B F(L)225A	F(L)200C F(L)225B F225C F(L)250A F(L)250G	F(L)250B	F200D F225D F225G F250C F250F F275A	F(L)225F F(L)250D F(L)300B	F(L)300A (’08–’10MY) F(L)350A (’08–’10MY)	F(L)300A (’11MY) F(L)350A (’11MY)
Item	Diagnosis code													
Remote control system	172									○		○	○	○
Remote control system	173									○		○	○	○
Remote control system	174									○		○	○	○
Remote control system	175									○		○	○	○
Remote control system	176									○		○	○	○
Remote control system	177									○		○	○	○
Remote control system	178									○		○	○	○
Remote control system	179									○		○	○	○
Remote control system	180									○		○	○	○
Remote control system	181									○		○	○	○
Remote control system	183									○		○	○	○
Remote control system	184									○		○	○	○
Remote control system	186									○		○	○	○
Remote control system	187									○		○	○	○
ETV	112								○	○	○	○	○	○
ETV	113								○	○	○	○	○	○
ETV	114								○	○	○	○	○	○
ETV	115								○	○	○	○	○	○
ETV	116								○	○	○	○	○	○
ETV	117								○	○	○	○	○	○
ETV	118								○	○	○	○	○	○
ETV	119								○	○	○	○	○	○
ETV	121								○	○	○	○	○	○
ETV	122								○	○	○	○	○	○
ETV	123								○	○	○	○	○	○
ETV	129								○	○	○	○	○	○
ETV	136								○	○	○	○	○	○
ETV	137								○	○	○	○	○	○
ETV	138								○	○	○	○	○	○
ETV	139								○	○	○	○	○	○
ETV	141								○	○	○	○	○	○
ETV	142								○	○	○	○	○	○
ETV	143								○	○	○	○	○	○
ETV	144								○	○	○	○	○	○
ETV	145								○	○	○	○	○	○

Engine Record

		A	B	C	D	E	F	G	H	I	J	K	L	M
	Engine type	HPDI 2596 cm ³	HPDI 3342 cm ³	L3 747 cm ³	L4 1741 cm ³	1: L4/1741 cm ³ 2: L4/1596 cm ³ 3: L4/996 cm ³ 4: L3/747 cm ³	L4 2670 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 Bass 4169 cm ³	V6 4169 cm ³	V8 5330 cm ³	V8 5330 cm ³
	Model name	(L)Z150P Z150Q Z175G Z175H (L)Z200N Z200P Z200Q	Z200R Z225H Z240A Z240B (L)Z250D Z250F (L)Z300A Z300B	F40F F30B	F(L)115A (-’00)	1: F(L)115A (’01–) 2: F75B, F75C, F80B, F80C, F90B, F100D 3: F50F, FT50G, F60C, FT60D, F70A 4: F40D, F40G	F(L)150A F(L)150B	F(L)200A F(L)200B F(L)225A	F(L)200C F(L)225B F225C F(L)250A F(L)250G	F(L)250B	F200D F225D F225G F250C F250F F275A	F(L)225F F(L)250D F(L)300B	F(L)300A (’08–’10MY) F(L)350A (’08–’10MY)	F(L)300A (’11MY) F(L)350A (’11MY)
Item	Unit													
Engine speed (max.)	r/min		○							○	○	○	○	○
Fuel pressure (min.)	MPa		○											
Over-rev. control record	(time of occurrence)		○							○	○	○	○	○
Overheat record	(time of occurrence)		○							○	○	○	○	○
Low oil pressure count	times									○	○	○	○	○
Knock control count	times									○	○	○	○	○

Engine operating hours

		A	B	C	D	E	F	G	H	I	J	K	L	M
	Engine type	HPDI 2596 cm ³	HPDI 3342 cm ³	L3 747 cm ³	L4 1741 cm ³	1: L4/1741 cm ³ 2: L4/1596 cm ³ 3: L4/996 cm ³ 4: L3/747 cm ³	L4 2670 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 Bass 4169 cm ³	V6 4169 cm ³	V8 5330 cm ³	V8 5330 cm ³
	Model name	(L)Z150P Z150Q Z175G Z175H (L)Z200N Z200P Z200Q	Z200R Z225H Z240A Z240B (L)Z250D Z250F (L)Z300A Z300B	F40F F30B	F(L)115A (-’00)	1: F(L)115A (’01–) 2: F75B, F75C, F80B, F80C, F90B, F100D 3: F50F, FT50G, F60C, FT60D, F70A 4: F40D, F40G	F(L)150A F(L)150B	F(L)200A F(L)200B F(L)225A	F(L)200C F(L)225B F225C F(L)250A F(L)250G	F(L)250B	F200D F225D F225G F250C F250F F275A	F(L)225F F(L)250D F(L)300B	F(L)300A (’08–’10MY) F(L)350A (’08–’10MY)	F(L)300A (’11MY) F(L)350A (’11MY)
Engine speed	Operating hours													
– 1000 r/min	h	○	○	○		○	○	○	○	○	○	○	○	○
1000 – 2000 r/min	h	○	○	○		○	○	○	○	○	○	○	○	○
2000 – 3000 r/min	h	○	○	○		○	○	○	○	○	○	○	○	○
3000 – 4000 r/min	h	○	○	○		○	○	○	○	○	○	○	○	○
4000 – 5000 r/min	h	○	○	○		○	○	○	○	○	○	○	○	○
5000 – 6000 r/min	h	○	○	○		○	○	○	○	○	○	○	○	○
6000 – 7000 r/min	h	○	○	○		○	○	○	○	○	○	○	○	○
Total operating hours	h	○	○	○		○	○	○	○	○	○	○	○	○

Engine Monitor

		A	B	C	D	E	F	G	H	I	J	K	L	M
	Engine type	HPDI 2596 cm ³	HPDI 3342 cm ³	L3 747 cm ³	L4 1741 cm ³	1: L4/1741 cm ³ 2: L4/1596 cm ³ 3: L4/996 cm ³ 4: L3/747 cm ³	L4 2670 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 Bass 4169 cm ³	V6 4169 cm ³	V8 5330 cm ³	V8 5330 cm ³
	Model name	(L)Z150P Z150Q Z175G Z175H (L)Z200N Z200P Z200Q	Z200R Z225H Z240A Z240B (L)Z250D Z250F (L)Z300A Z300B	F40F F30B	F(L)115A (-’00)	1: F(L)115A (’01–) 2: F75B, F75C, F80B, F80C, F90B, F100D 3: F50F, FT50G, F60C, FT60D, F70A 4: F40D, F40G	F(L)150A F(L)150B	F(L)200A F(L)200B F(L)225A	F(L)200C F(L)225B F225C F(L)250A F(L)250G	F(L)250B	F200D F225D F225G F250C F250F F275A	F(L)225F F(L)250D F(L)300B	F(L)300A (’08–’10MY) F(L)350A (’08–’10MY)	F(L)300A (’11MY) F(L)350A (’11MY)
Item	Unit/state													
Engine speed	r/min	○	○	○	○	○	○	○	○	○	○	○	○	○
Intake air pressure	kPa			○	○	○	○	○	○	○	○	○	○	○
Intake air pressure	inHg			○	○	○	○	○	○	○	○	○	○	○
TPS1	V	○	○	○		○	○	○	○	○	○	○	○	○
Throttle valve opening angle	deg	○	○	○	○	○	○	○	○	○	○	○	○	○
TPS2	V								○	○	○	○	○	○
APS1	V								○		○			
APS2	V								○		○			
Throttle request	%									○		○	○	○
LPS (main)	V									○		○	○	○
LPS (sub)	V									○		○	○	○
LPS_PORT (main)	V									○		○	○	○
LPS_PORT (sub)	V									○		○	○	○
LPS_STBD (main)	V									○		○	○	○
LPS_STBD (sub)	V									○		○	○	○
Active remote control	–									○		○	○	○
SPS1	V									○		○	○	○
SPS2	V									○		○	○	○
Shift request	%									○		○	○	○
Fuel pressure	Mpa	○	○											
Fuel pressure	psi	○	○											
Atmospheric pressure	hPa	○	○	○	○	○	○	○	○	○	○	○	○	○
Atmospheric pressure	inHg	○	○	○	○	○	○	○	○	○	○	○	○	○
Battery voltage	V	○	○	○	○	○	○	○	○	○	○	○	○	○
Fuel injection duration	ms	○	○	○	○	○	○	○	○	○	○	○	○	○
Ignition timing	deg	○	○	○	○	○	○	○	○	○	○	○	○	○
Cooling water temperature	℃	○	○	○	○	○								
Cooling water temperature	℉	○	○	○	○	○								
Engine temperature	℃						○	○	○	○	○	○	○	○
Engine temperature	℉						○	○	○	○	○	○	○	○
Intake air temperature	℃	○	○	○	○	○	○	○	○	○	○	○	○	○
Intake air temperature	℉	○	○	○	○	○	○	○	○	○	○	○	○	○

Functions by model (Outboard motor)

		A	B	C	D	E	F	G	H	I	J	K	L	M
	Engine type	HPDI 2596 cm ³	HPDI 3342 cm ³	L3 747 cm ³	L4 1741 cm ³	1: L4/1741 cm ³ 2: L4/1596 cm ³ 3: L4/996 cm ³ 4: L3/747 cm ³	L4 2670 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 Bass 4169 cm ³	V6 4169 cm ³	V8 5330 cm ³	V8 5330 cm ³
	Model name	(L)Z150P Z150Q Z175G Z175H (L)Z200N Z200P Z200Q	Z200R Z225H Z240A Z240B (L)Z250D Z250F (L)Z300A Z300B	F40F F30B	F(L)115A (-’00)	1: F(L)115A (’01–) 2: F75B, F75C, F80B, F80C, F90B, F100D 3: F50F, FT50G, F60C, FT60D, F70A 4: F40D, F40G	F(L)150A F(L)150B	F(L)200A F(L)200B F(L)225A	F(L)200C F(L)225B F225C F(L)250A F(L)250G	F(L)250B	F200D F225D F225G F250C F250F F275A	F(L)225F F(L)250D F(L)300B	F(L)300A (’08–’10MY) F(L)350A (’08–’10MY)	F(L)300A (’11MY) F(L)350A (’11MY)
Item	Unit/state													
Oil pressure	kPa						○	○	○	○	○	○	○	○
Oil pressure	psi						○	○	○	○	○	○	○	○
Intake cam timing (S bank)	deg								○	○	○	○	○	○
Intake cam timing (P bank)	deg								○	○	○	○	○	○
PTT sensor	V												○	○
O2 sensor	V	○												
ISC valve opening angle	%			○	○	○	○	○						
Oil plunger pump discharge	Low/High	○	○											
Cooling water pressure	kPa											○		○
Cooling water pressure	psi											○		○
Speed	km/h											○		○
Speed	mph											○		○
Cylinder #1 firing state	Yes/No	○	○											
Cylinder #2 firing state	Yes/No	○	○											
Cylinder #3 firing state	Yes/No	○	○											
Cylinder #4 firing state	Yes/No	○	○											
Cylinder #5 firing state	Yes/No	○	○											
Cylinder #6 firing state	Yes/No	○	○											
Starter relay	ON/OFF	○	○											
Engine shut-off switch	ON/OFF	○	○	○	○	○	○	○	○	○	○	○	○	○
Shift position switch	ON/OFF	○	○	○	○	○	○	○	○		○			
Shift position judgment	ON/OFF									○		○	○	○
Multi-engine system	ON/OFF	○	○		○	○	○	○	○	○	○	○	○	○
Shift cut-off switch	ON/OFF		○				○	○	○		○			
Shift cut-off	ON/OFF									○		○	○	○
Thermoswitch	ON/OFF	○	○				○	○	○	○	○	○	○	○
Main switch	ON/OFF	○	○				○		○		○			
R/C ECM signal	ON/OFF									○		○	○	○
Main switch signal	ON/OFF									○		○	○	○
Start/stop button	ON/OFF											○		○
Possibility to start	ON/OFF											○		○
Main relay	ON/OFF								○	○	○	○	○	○
ETV relay	ON/OFF								○	○	○	○	○	○
Fuel pump relay	ON/OFF								○	○	○	○	○	○
Shift actuator relay	ON/OFF									○		○	○	○

Functions by model (Outboard motor)

		A	B	C	D	E	F	G	H	I	J	K	L	M
	Engine type	HPDI 2596 cm ³	HPDI 3342 cm ³	L3 747 cm ³	L4 1741 cm ³	1: L4/1741 cm ³ 2: L4/1596 cm ³ 3: L4/996 cm ³ 4: L3/747 cm ³	L4 2670 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 Bass 4169 cm ³	V6 4169 cm ³	V8 5330 cm ³	V8 5330 cm ³
	Model name	(L)Z150P Z150Q Z175G Z175H (L)Z200N Z200P Z200Q	Z200R Z225H Z240A Z240B (L)Z250D Z250F (L)Z300A Z300B	F40F F30B	F(L)115A (-’00)	1: F(L)115A (’01–) 2: F75B, F75C, F80B, F80C, F90B, F100D 3: F50F, FT50G, F60C, FT60D, F70A 4: F40D, F40G	F(L)150A F(L)150B	F(L)200A F(L)200B F(L)225A	F(L)200C F(L)225B F225C F(L)250A F(L)250G	F(L)250B	F200D F225D F225G F250C F250F F275A	F(L)225F F(L)250D F(L)300B	F(L)300A (’08–’10MY) F(L)350A (’08–’10MY)	F(L)300A (’11MY) F(L)350A (’11MY)
Item	Unit/state													
Free throttle switch	ON/OFF									○			○	
PTT switch UP	ON/OFF									○		○	○	○
PTT switch DOWN	ON/OFF									○		○	○	○
Over-rev. control release lead	ON/OFF	○												
Oil pressure switch	ON/OFF			○	○	○								
Water detection switch	ON/OFF	○	○					○ (with water detection switch)						
Oil level switch (remote tank)	ON/OFF	○	○											
Oil level switch1(engine tank)	ON/OFF	○	○											
Oil level switch2(engine tank)	ON/OFF	○	○											
Oil level switch3(engine tank)	ON/OFF	○	○											

Component Test

		A	B	C	D	E	F	G	H	I	J	K	L	M
	Engine type	HPDI 2596 cm ³	HPDI 3342 cm ³	L3 747 cm ³	L4 1741 cm ³	1: L4/1741 cm ³ 2: L4/1596 cm ³ 3: L4/996 cm ³ 4: L3/747 cm ³	L4 2670 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 Bass 4169 cm ³	V6 4169 cm ³	V8 5330 cm ³	V8 5330 cm ³
	Model name	(L)Z150P Z150Q Z175G Z175H (L)Z200N Z200P Z200Q	Z200R Z225H Z240A Z240B (L)Z250D Z250F (L)Z300A Z300B	F40F F30B	F(L)115A (-’00)	1: F(L)115A (’01–) 2: F75B, F75C, F80B, F80C, F90B, F100D 3: F50F, FT50G, F60C, FT60D, F70A 4: F40D, F40G	F(L)150A F(L)150B	F(L)200A F(L)200B F(L)225A	F(L)200C F(L)225B F225C F(L)250A F(L)250G	F(L)250B	F200D F225D F225G F250C F250F F275A	F(L)225F F(L)250D F(L)300B	F(L)300A (’08–’10MY) F(L)350A (’08–’10MY)	F(L)300A (’11MY) F(L)350A (’11MY)
Stationary Test Item	Test type													
Activate ignition coil #1	Activation test	○	○	○					○	○	○	○	○	○
Activate ignition coil #2	Activation test	○	○	○					○	○	○	○	○	○
Activate ignition coil #3	Activation test	○	○	○					○	○	○	○	○	○
Activate ignition coil #4	Activation test	○	○						○	○	○	○	○	○
Activate ignition coil #5	Activation test	○	○						○	○	○	○	○	○
Activate ignition coil #6	Activation test	○	○						○	○	○	○	○	○
Activate ignition coil #7	Activation test												○	○
Activate ignition coil #8	Activation test												○	○
Activate ignition coil: #1 & 4	Activation test					○	○	○						
Activate ignition coil: #2 & 3	Activation test					○	○							
Activate ignition coil: #2 & 5	Activation test							○						
Activate ignition coil: #3 & 6	Activation test							○						
Activate injector #1	Activation test	○	○	○			○		○	○	○	○	○	○
Activate injector #2	Activation test	○	○	○			○		○	○	○	○	○	○
Activate injector #3	Activation test	○	○	○			○		○	○	○	○	○	○
Activate injector #4	Activation test	○	○				○		○	○	○	○	○	○
Activate injector #5	Activation test	○	○						○	○	○	○	○	○
Activate injector #6	Activation test	○	○						○	○	○	○	○	○
Activate injector #7	Activation test												○	○
Activate injector #8	Activation test												○	○
Activate injectors #1 & #4	Activation test					○		○						
Activate injectors #2 & #3	Activation test					○								
Activate injectors #2 & #5	Activation test							○						
Activate injectors #3 & #6	Activation test							○						
Activate electric fuel pump	Activation test	○	○	○		○	○	○	○	○	○	○	○	○
Activate low-press. fuel pump	Activation test							○	○	○	○	○	○	○
Activate oil plunger pump	Activation test	○	○											
Activate ISC valve	Activation test			○		○	○	○						
Activate OCV (S bank)	Activation test								○	○	○	○	○	○
Activate OCV (P bank)	Activation test								○	○	○	○	○	○

Functions by model (Outboard motor)

		A	B	C	D	E	F	G	H	I	J	K	L	M
	Engine type	HPDI 2596 cm ³	HPDI 3342 cm ³	L3 747 cm ³	L4 1741 cm ³	1: L4/1741 cm ³ 2: L4/1596 cm ³ 3: L4/996 cm ³ 4: L3/747 cm ³	L4 2670 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 Bass 4169 cm ³	V6 4169 cm ³	V8 5330 cm ³	V8 5330 cm ³
	Model name	(L)Z150P Z150Q Z175G Z175H (L)Z200N Z200P Z200Q	Z200R Z225H Z240A Z240B (L)Z250D Z250F (L)Z300A Z300B	F40F F30B	F(L)115A (-’00)	1: F(L)115A (’01–) 2: F75B, F75C, F80B, F80C, F90B, F100D 3: F50F, FT50G, F60C, FT60D, F70A 4: F40D, F40G	F(L)150A F(L)150B	F(L)200A F(L)200B F(L)225A	F(L)200C F(L)225B F225C F(L)250A F(L)250G	F(L)250B	F200D F225D F225G F250C F250F F275A	F(L)225F F(L)250D F(L)300B	F(L)300A (’08–’10MY) F(L)350A (’08–’10MY)	F(L)300A (’11MY) F(L)350A (’11MY)
Active Test Item	Test type													
Drop cylinder #1	Drop test	○	○							○	○	○	○	○
Drop cylinder #2	Drop test	○	○							○	○	○	○	○
Drop cylinder #3	Drop test	○	○							○	○	○	○	○
Drop cylinder #4	Drop test	○	○							○	○	○	○	○
Drop cylinder #5	Drop test	○	○							○	○	○	○	○
Drop cylinder #6	Drop test	○	○							○	○	○	○	○
Drop cylinder #7	Drop test												○	○
Drop cylinder #8	Drop test												○	○
Fully open ISC valve	Activation test			○		○	○	○						
Fix ISC valve opening angle	Activation test			○		○	○	○						

Logger Graph

		A	B	C	D	E	F	G	H	I	J	K	L	M
	Engine type	HPDI 2596 cm ³	HPDI 3342 cm ³	L3 747 cm ³	L4 1741 cm ³	1: L4/1741 cm ³ 2: L4/1596 cm ³ 3: L4/996 cm ³ 4: L3/747 cm ³	L4 2670 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 Bass 4169 cm ³	V6 4169 cm ³	V8 5330 cm ³	V8 5330 cm ³
	Model name	(L)Z150P Z150Q Z175G Z175H (L)Z200N Z200P Z200Q	Z200R Z225H Z240A Z240B (L)Z250D Z250F (L)Z300A Z300B	F40F F30B	F(L)115A (-’00)	1: F(L)115A (’01–) 2: F75B, F75C, F80B, F80C, F90B, F100D 3: F50F, FT50G, F60C, FT60D, F70A 4: F40D, F40G	F(L)150A F(L)150B	F(L)200A F(L)200B F(L)225A	F(L)200C F(L)225B F225C F(L)250A F(L)250G	F(L)250B	F200D F225D F225G F250C F250F F275A	F(L)225F F(L)250D F(L)300B	F(L)300A (’08–’10MY) F(L)350A (’08–’10MY)	F(L)300A (’11MY) F(L)350A (’11MY)
Item	Unit/state													
Engine speed	r/min	○	○	○		○	○	○	○	○	○	○	○	○
Fuel pressure	Mpa	○	○											
Battery voltage	V	○	○	○		○	○	○	○	○	○	○	○	○
O2 sensor voltage	V	○												
TPS	V	○	○	○		○	○	○	○	○	○	○	○	○
Cooling water temperature	℃	○	○	○		○								
Engine temperature	℃						○	○	○	○	○	○	○	○
Intake air pressure	kPa			○		○	○	○	○	○	○	○	○	○
Oil pressure switch	ON/OFF			○		○								
Oil pressure	kPa						○	○	○	○	○	○	○	○
Throttle request	%									○		○	○	○
SPS	V									○		○	○	○

ECM Rec Graph

		A	B	C	D	E	F	G	H	I	J	K	L	M
	Engine type	HPDI 2596 cm ³	HPDI 3342 cm ³	L3 747 cm ³	L4 1741 cm ³	1: L4/1741 cm ³ 2: L4/1596 cm ³ 3: L4/996 cm ³ 4: L3/747 cm ³	L4 2670 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 Bass 4169 cm ³	V6 4169 cm ³	V8 5330 cm ³	V8 5330 cm ³
	Model name	(L)Z150P Z150Q Z175G Z175H (L)Z200N Z200P Z200Q	Z200R Z225H Z240A Z240B (L)Z250D Z250F (L)Z300A Z300B	F40F F30B	F(L)115A (-’00)	1: F(L)115A (’01–) 2: F75B, F75C, F80B, F80C, F90B, F100D 3: F50F, FT50G, F60C, FT60D, F70A 4: F40D, F40G	F(L)150A F(L)150B	F(L)200A F(L)200B F(L)225A	F(L)200C F(L)225B F225C F(L)250A F(L)250G	F(L)250B	F200D F225D F225G F250C F250F F275A	F(L)225F F(L)250D F(L)300B	F(L)300A (’08–’10MY) F(L)350A (’08–’10MY)	F(L)300A (’11MY) F(L)350A (’11MY)
Item	Unit/state													
Engine speed	r/min								○	○	○	○	○	○
APS1	V								○		○			
APS2	V								○		○			
TPS1	V								○	○	○	○	○	○
TPS2	V								○	○	○	○	○	○
Throttle request	%									○		○	○	○
Intake air pressure	kPa								○	○	○	○	○	○
Battery voltage	V								○	○	○	○	○	○
Target TPS voltage	V								○	○	○	○	○	○
Ref. TPS voltage	V								○	○	○	○	○	○
Ref. APS voltage	V								○		○			
Target TPS voltage for ISC	V								○	○	○	○	○	○
Total hours of operation	h								○	○	○	○	○	○
Trigger	h								○	○	○	○	○	○
Cord	–								○	○	○	○	○	○
Engine stop mode	ON/OFF								○	○	○	○	○	○
Engine start mode	ON/OFF								○	○	○	○	○	○
SW-activated engine stop mode	ON/OFF								○	○	○	○	○	○
Engine shut-off switch	ON/OFF								○	○	○	○	○	○
Main relay	ON/OFF								○	○	○	○	○	○
ETV relay	ON/OFF								○	○	○	○	○	○
Overheat alert	ON/OFF								○	○	○	○	○	○
Low oil pressure alert	ON/OFF								○	○	○	○	○	○

Boat System and Maintenance

		A	B	C	D	E	F	G	H	I	J	K	L	M
	Engine type	HPDI 2596 cm ³	HPDI 3342 cm ³	L3 747 cm ³	L4 1741 cm ³	1: L4/1741 cm ³ 2: L4/1596 cm ³ 3: L4/996 cm ³ 4: L3/747 cm ³	L4 2670 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 3352 cm ³	V6 Bass 4169 cm ³	V6 4169 cm ³	V8 5330 cm ³	V8 5330 cm ³
	Model name	(L)Z150P Z150Q Z175G Z175H (L)Z200N Z200P Z200Q	Z200R Z225H Z240A Z240B (L)Z250D Z250F (L)Z300A Z300B	F40F F30B	F(L)115A (-’00)	1: F(L)115A (’01–) 2: F75B, F75C, F80B, F80C, F90B, F100D 3: F50F, FT50G, F60C, FT60D, F70A 4: F40D, F40G	F(L)150A F(L)150B	F(L)200A F(L)200B F(L)225A	F(L)200C F(L)225B F225C F(L)250A F(L)250G	F(L)250B	F200D F225D F225G F250C F250F F275A	F(L)225F F(L)250D F(L)300B	F(L)300A (’08–’10MY) F(L)350A (’08–’10MY)	F(L)300A (’11MY) F(L)350A (’11MY)
Item	Setting state													
Tilt Limiter	Set/Reset												○	○
R/C Reset	Reset									○		○	○	○
Oil Chan Rec	Record									○	○	○	○	○



Abbreviation

The following abbreviations are used in this Instruction Manual and on the YAMAHA Diagnostic System screen. While not included in this table, some names displayed on the YAMAHA Diagnostic System screen have a restriction on the numbers of characters, and are therefore abbreviated.

Abbreviation

Abbreviation	Description
APS	Accelerator Position Sensor
ECM	Electronic Control Module
ETV	Electronic Throttle Valve
EX	Exhaust

Abbreviation	Description
IN	Intake
ISC	Idle Speed Control
OTS	Off-throttle steering system
R	Reverse

Abbreviation	Description
TPS	Throttle Position Sensor
YDIS	YAMAHA Diagnostic System
YPVS	Yamaha Power Valve System

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Introduction

The YAMAHA Diagnostic System uses precision fault diagnosis to offer better serviceability at a time when there is increasing demand for service tools for electronically controlled products. It provides quick, reliable, safe, and reasonable service, and is intended to obtain customer satisfaction. The YAMAHA Diagnostic System features updated software and expanded tool functions that allow it to respond to new models and technologies, maintaining compatibility with regulations.

1. Features

YAMAHA Diagnostic System Version 2.00 covers most of the functions of the Version 1 series. (Not interchangeable)
New functions of Input Settings and Logging have been added.

1-1. Functions by data transmission type

Composition and function-specific characteristics of YAMAHA Diagnostic System Version 2.00 are as per the list below.

Menu				Primary Function	What You Can Do	Comparison to Version 1.33
Top Menu	Main Menu	2nd-level Menu	3rd-level Menu			
Start	Engine	Diagnosis	Diagnosis	Displays results of current fault diagnosis.	Identify abnormalities.	
			Diagnosis Record	Displays a history of fault diagnosis recorded in the ECM.		
			Engine Record(*1)	Displays the engine state recorded in the ECM.	Check the engine trouble history.	
			Engine operating hours by RPM	Displays operating hours by RPM.	Check the history of engine usage.	
		Engine Monitor	Digital Display	Displays ECM data numerically.	Check the current operating state of the engine.	
			Graph Display	Displays ECM data in graph form.		
			Input Setting	Settings to display data from connected external devices on YDIS screen.	View data from external devices on YDIS.	New
		Component Test	Stationery Test	Performs an operational test of each component with the engine stopped.	Check functioning of each component.	
			Active Test	Performs an operational test of each component with the engine running.		

(*1) The following functions are not available in watercrafts: CAN Information, Boat System, Maintenance, Engine Record, and unit selection in the Setting.

Introduction

Menu				Primary Function	What You Can Do	Comparison to Version 1.33	
Top Menu	Main Menu	2nd-level Menu	3rd-level Menu				
Start	Engine	Data Logger	Record Set	Displays a graph of past data recorded in the ECM.	Check the past operating state of the engine.		
			Show Data	Displays a graph of data recorded before and after troubles.			
			Logging	Displays a graph of data recorded on the adapter.		New	
	Boat System (*1)	Tilt Limiter		Sets the tilt angle when the outboard motor is tilted up.	Configure systems.		
		R/C System Reset		Returns connection between the outboard motor and the Digital Electronic Control to default settings.			
	Maintenance (*1)	Engine oil change record		Records oil change history.		Manage oil change history.	
Update				Update database.		Update database.	
Setting(*1)				Sets the language and units displayed on YDIS screen.		Switch of screen displays.	New
Off Line				Displays data saved on the computer, when the ECM is disconnected.		Check data saved on computer without connecting to ECM.	
CAN Information (*1)	Communication List			Displays quality of CAN system device connection and transmission.		Distinguish the type of device connected.	New
	Bus Statistics			Displays the transmission load ratio for the CAN system.		Check whether devices are connected correctly.	

(*1) The following functions are not available in watercrafts: CAN Information, Boat System, Maintenance, Engine Record, and unit selection in the Setting.

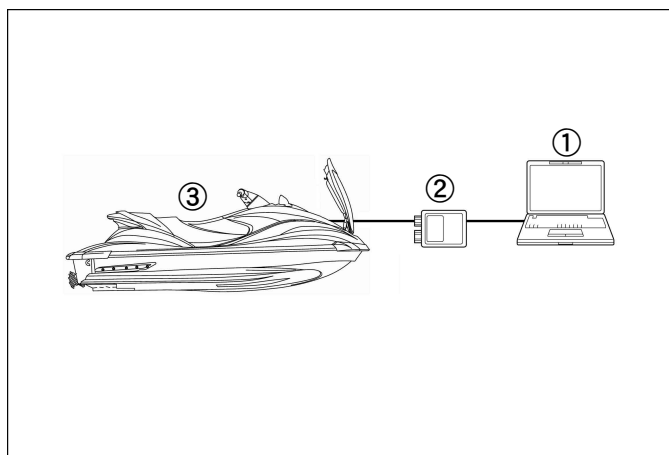
1-2. Transmission Method

YAMAHA Diagnostic System Version 2.00 uses the same transmission method as used in the YAMAHA Diagnostic System Version 1 series, with a transmission harness connected to the watercraft.

■ K-Line

K-Line is the same transmission method as used in the Version 1 series, with a transmission harness connected to the water vehicle.

K-Line connections can use functions other than CAN Information and unit selection in the Setting.



① Computer

③ Watercraft

② Adapter

1-3. Newly added functions

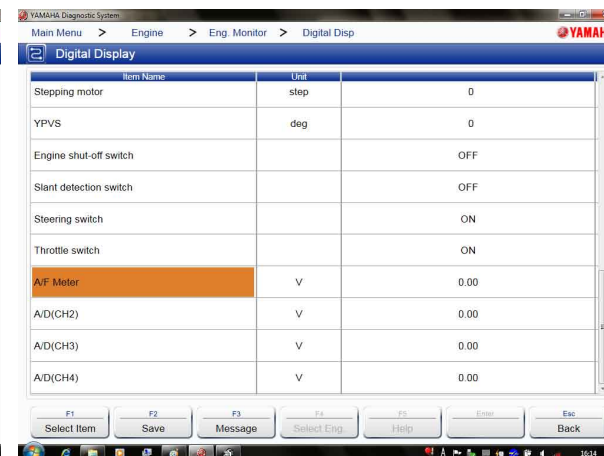
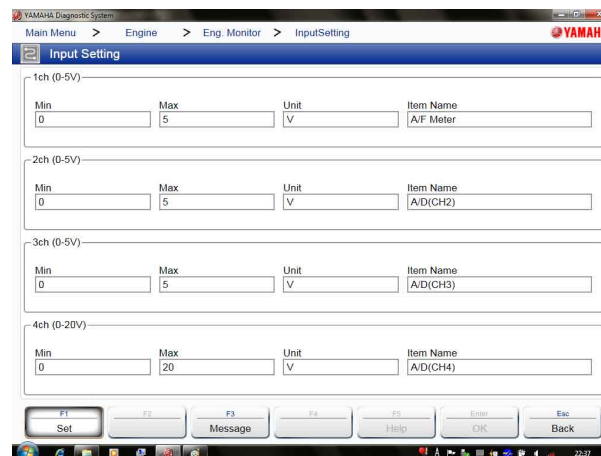
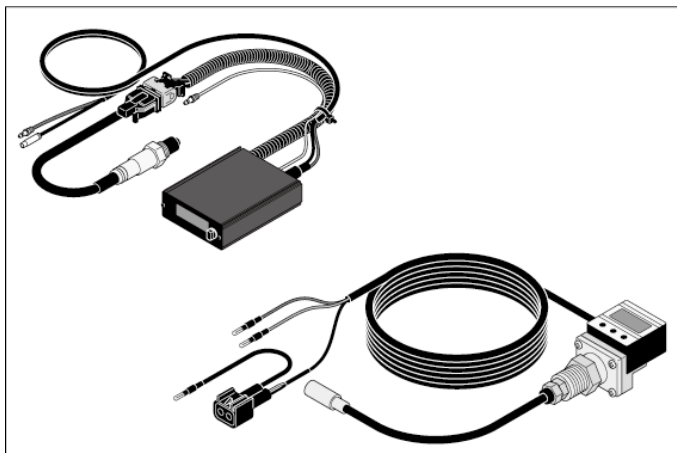
■ Input Setting

Connect external devices such as A/F and fuel pressure sensors, and specify equipment names and units to enable display on the Engine Monitor and logging of these values.

This can convert voltage values input from external devices to arbitrary values, and input these as 4ch. Channels 1–3 support input voltage of 0–5 V, and channel 4 supports input voltage of 0–20 V.

TIP:

Please use commercially-available external devices.



■ Logging

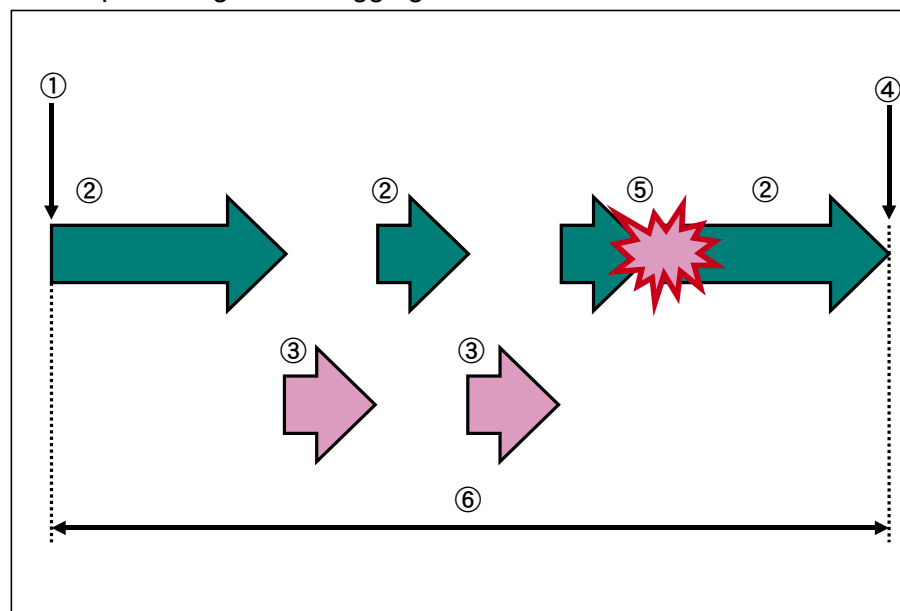
With the YAMAHA Diagnostic System Version 2.00, you can record data in the adapter. After configuring recording properties in the adapter while the computer and engine are connected, removing the USB cable from the adapter records data in the adapter. These data can be displayed in graph form on the YAMAHA Diagnostic System monitor.

With this system, the computer and engine are not connected during logging. Accordingly, because operating conditions can be recorded by placing the adapter inside the engine room, it will be easier to reproduce trouble conditions, and to investigate the causes of any faults.

TIP:

- Removing the USB cable connected to the computer from the adapter starts recording. Connecting the USB cable to the adapter stops recording.
- Recording normal data (while in default condition) enables comparison with fault data, and makes it easier to investigate causes of faults.
- In the future, addition of the function by which logging can be stopped through use of the trigger switch harness and switch extension harness is expected.

Conceptual diagram of Logging



① Disconnect the USB cable from the adapter.

② Recording (engine speed: 500 r/min or more)

③ Stop recording (engine speed: less than 500 r/min)

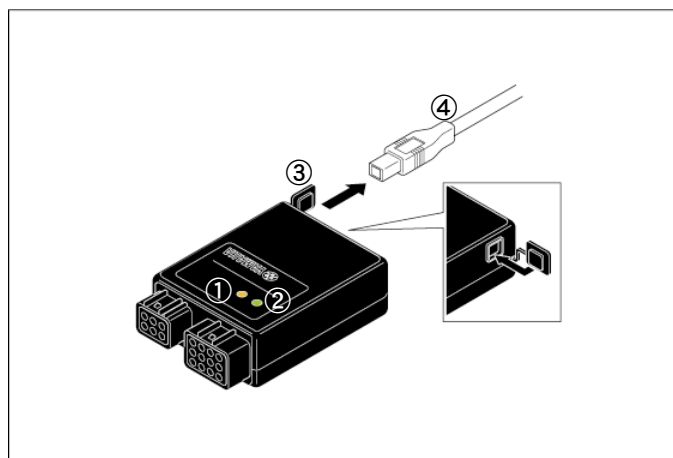
④ Connect the USB cable to the adapter.

⑤ Fault occurs.

⑥ Adapter recording status

TIP:

- The adapter is able to record data in 1.6 MB of memory under preconfigured conditions.
- The green LED on the adapter indicates the power status. The red LED indicates it is recording.
- During operation, the adapter is supplied power from the engine. If the engine is stopped while the adapter is recording, then the rechargeable battery within the adapter will perform a backup. (Guaranteed for 48 hours with the battery charged for an hour)
- If the internal battery becomes depleted, recorded data will be deleted. Accordingly, before this happens save the data or connect the adapter to the engine and recharge the battery.
- During logging, ensure the waterproof cap is on the USB cable port.



① Red LED
② Green LED

③ Waterproof cap
④ USB cable

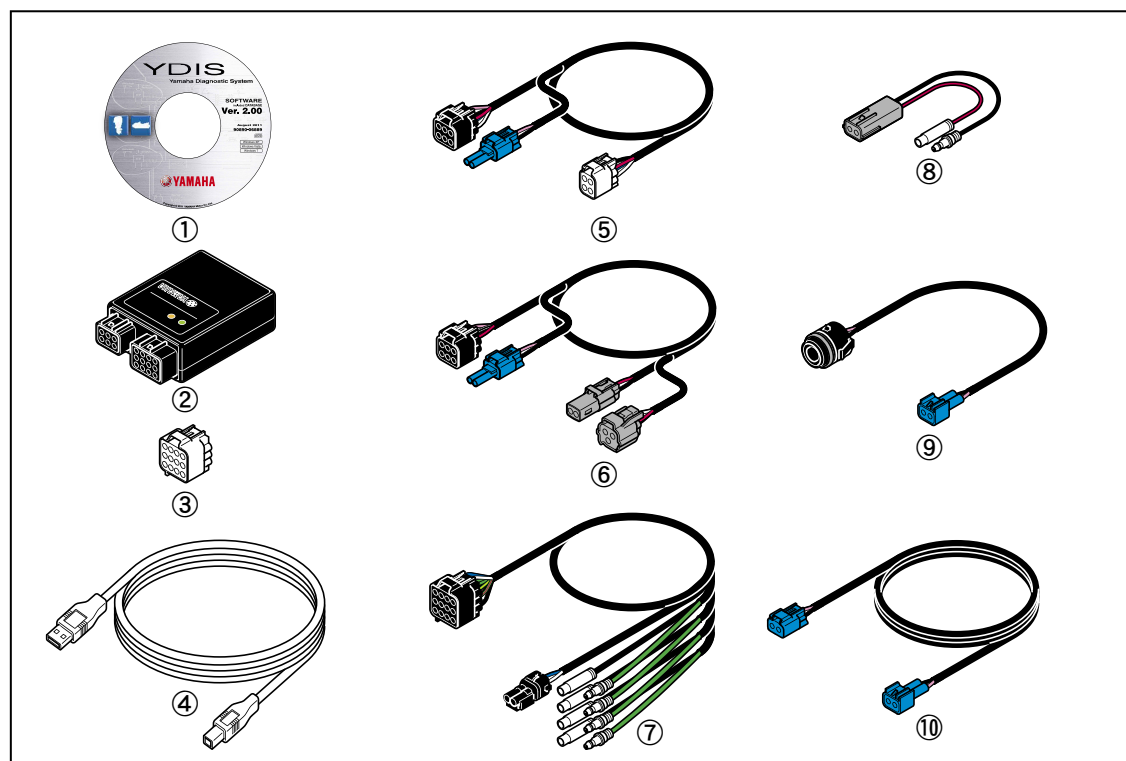
Introduction

Adapter LED lighting patterns

LED Status		Adapter Status (Normal logging condition)		Description
Green LED	Red LED			
 (OFF)	 (OFF)	Normal	Power OFF	The adapter is not being supplied with power.
 (ON)	 (ON)	Normal	Normal logging not set Data recording completed Connected to computer	If normal logging is not being used, if recording is completed, or if connected to the computer.
 (ON)	 (0.5 sec. ON, 0.5 sec. OFF)	Normal	Recording data	If engine speed is 500 r/min or more, and communication established with the engine ECM.
 (ON)	 (1 sec. ON, 1 sec. OFF)	Normal	Stopping data recording	If engine speed is less than 500 r/min, and communication established with the engine ECM.
 (ON)	 (0.05 sec. ON, 0.05 sec. OFF)	Abnormal	Transmission error	If communications cannot be established with the engine ECM. Cause: The engine power is OFF. The transmission harness or USB cable is disconnected. Connected to a different engine to that set for recording. Response: Check the harness, cables, and other connections.
 (0.05 sec. ON, 0.05 sec. OFF)	 (OFF)	Abnormal	Adapter firmware (internal software) abnormality	Error in updating the adapter firmware (internal software). Cause: Data erased, or a USB cable removed while setting recorded values, etc. Response: Close YAMAHA Diagnostic System, check connections, then restart.

2. Compositions of the tool

YAMAHA Diagnostic System Version 2.00 is made up of 10 components.



- | | |
|--|------------------------------------|
| ① CD-ROM (software + Instruction Manual) | ⑥ K-Line harness |
| ② Adapter | ⑦ AD harness (for external input) |
| ③ Adapter cap | ⑧ Power supply harness |
| ④ USB cable(5 m) | ⑨ Trigger switch harness |
| ⑤ CAN-Line harness | ⑩ Trigger switch extension harness |

3. Hardware requirements

It is recommended that the computer upon which this software will be installed meets the following conditions.

PC:

IBM PC/AT compatible PC with a Microsoft Windows Operating System.

Operating system:

Microsoft Windows XP Professional SP3 (32 bit), Windows Vista Business SP2 (32 bit), Windows 7 Professional SP1 (32 bit/64 bit)

CPU:

Windows XP: Pentium, 1 GHz or higher

Windows Vista: Intel processor, 1.6 GHz or higher

Windows 7 (32 bit): 1.6 GHz or higher 32-bit (x 86) processor

Windows 7 (64 bit): 1.6 GHz or higher 64-bit (x 64) processor

Memory:

Windows XP: 512 MB or more

Windows Vista: 1 GB or more

Windows 7 (32 bit): 1 GB or more

Windows 7 (64 bit): 2 GB or more

Hard disk free space:

Windows XP: 1.5 GB or more

Windows Vista: 15 GB or more

Windows 7 (32 bit): 16 GB or more

Windows 7 (64 bit): 20 GB or more

Drive:

CD or DVD-capable drive

Display:

XGA (1024 x 768 pixels) or more, 16.7 million or more colors

Input devices:

Mouse, keyboard, and touch panel that are compatible with the operating systems mentioned above

Communication port:

USB port (USB 2.0 or 1.1)

Printer:

Compatible with the operating systems mentioned above

TIP:

- Operating speed may drop, depending on your computer.
 - The amount of memory and hard disk space may differ depending on your system environment. Using this system when there is little hard disk space available may cause memory shortages and other troubles.
 - Some functions may not operate correctly even when used on computers using one of the compatible operating systems due to limitations applied by a computer manufacturer.
 - Use a small font as a system font.
 - Before starting the YAMAHA Diagnostic System every first time after turning on the computer, quit any other applications that are running.
 - Do not use the screen saver, power saving, or stand-by function.
Communication may be cut off and YAMAHA Diagnostic System reset may be required.
 - Only one device (one computer to one adapter) can be tested, even when multiple adapters are connected to multiple USB ports on the computer.
 - Be sure to end this program if the login user is changed.
 - Do not use a USB hub.
 - Starting this software base may cause the adapter firmware to update.
 - Do not change the screen size when using this software.
-

4. Compatible models

This software is compatible with the following models:

Engine code	Model name	Sales name	Model year	Model group (*1)
60E	FX1000(A) (F1B)	FX, FX Cruiser	'02MY	A
	FX1000(A) (F1Y)	FX, FX Cruiser	'03–'05MY	B
6B6	FX1100(A) (F1S)	FX HO, FX Cruise HO	'06–'08MY	
	FX1100(A) (F1X)	FX HO, FX Cruise HO	'04–'05MY	
6B5	SRT1000(A, B, C) (F1C)	SX230, SR230, AR230	'06–'08MY	
6P6	SXT1100(A, B, C, D, E, F, G, H) (F2A)	AR230 High Output, SX230 High Output	'03–'06MY	
	FAT1100(A, B) (F2G)	212X, 212SS	'07–'09MY	C
60T	GP1300 (F1G)	GP1300R	'08–'11MY	
6D3	VX1100(A, B, C) (F1K)	VX, VX Sport, VX Deluxe, VX Cruiser	'03–'08MY	D
	VX1100(A, B, C) (F2L)	VX, VX Sport, VX Deluxe, VX Cruiser	'09MY	
6BU	VX1100(A, B, C) (F2N)	VX Sport, VX Deluxe, VX Cruiser	'10–'12MY	
6S8	FRT1100(A, B, C) (F1T)	AR210, SX210	'06–'11MY	E
	LAT1100(A, B) (F2K)	AR210, SX210	'12MY	
6S5	FX1800(A) (F1W)	FX SHO, FX Cruise SHO	'08–'11MY	F
6AN	GX1800 (F2R)	FZR	'09–'12MY	
	GX1800A (F2C)	FZS	'09–'12MY	
6BH	FY1800(A) (F2H)	FX HO, FX Cruise HO	'09–'11MY	
6CN	VX1800(A) (F2M)	VXS (VX-18S), VXR (VX-18R)	'11–'12MY	
6AA (*2)	FX1100(A) (F1X)	FX HO, FX Cruise HO	'07–'08MY	G
6AB (*2)	SXT1100(A, B, C, D, E, F, G, H) (F2A)	AR230 High Output, SX230 High Output	'08–'09MY	
	FAT1100(A, B) (F2G)	212X, 212SS	'08–'10MY	H
6CS	FA1800(A) (F2S)	FX SHO, FX Cruise SHO	'12MY	
6CR	FB1800(A) (F2T)	FX HO, FX Cruise HO	'12MY	
6AP	SXT1800(A, B, C, D, E, F, G, H, J) (F2D)	AR240 High Output, 242 Limited S, SX240 High Output, 242 limited	'10–'12MY	I
	XAT1800(A, B, C) (F2J)	212X, 212SS	'12MY	
6CW	RX1800(A, B, C, D) (F3A)	AR190, SX190	'12MY	

(*1) For details of each model group, see “[Functions by model \(Watercraft\)](#)”

(*2) With catalytic converter

TIP:

Previously sold models that are compatible with the YAMAHA Diagnostic System can also be used with Version 2.00.

5. Languages

This software supports the following languages:

English, French, Spanish, and Japanese

TIP:

Blank spaces are left so that other languages can be added as it becomes necessary in the future.

Installation

This section provides information on installing the YAMAHA Diagnostic System on your computer.

This explanation assumes that you are installing in a Windows 7 environment. Where necessary, screenshots from Windows XP or Windows Vista will be used.

1. Before installation

To use the YAMAHA Diagnostic System, the required component and device drivers must be installed at the same time as the Diagnostic System. These will be installed automatically by the installer. Required components: [. NET Framework 3.5 SP1] or later, [Windows Installer3.1] or later.

The required components are pre-installed in Windows 7.

Before installing the YAMAHA Diagnostic System, make sure that your computer meets the specified requirements.

For detailed information on the system requirements, see “[Hardware requirements](#).”

Start installation without the adapter connected to the computer, and then connect the adapter to the computer when installing the device drivers.

TIP:

It is strongly recommended that you quit all other programs before running the installer.

2. Installing the YAMAHA Diagnostic System

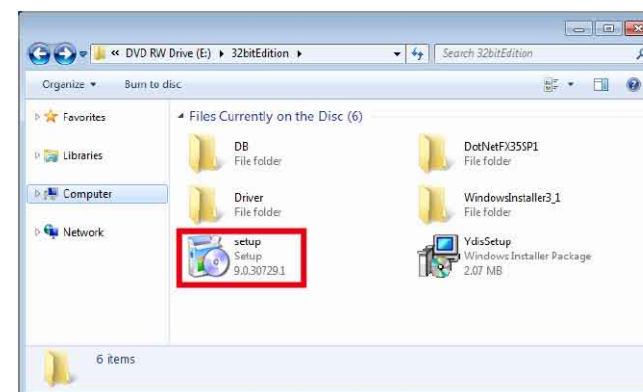
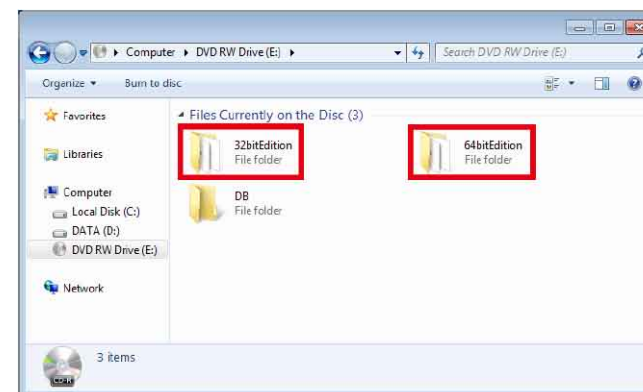
Install in the following order: Install required components → Install YAMAHA Diagnostic System

→ Install device drivers

For Windows 7, the required components are already installed, so begin by installing the YAMAHA Diagnostic System.

- 1.** Turn on your computer.
- 2.** Insert the YAMAHA Diagnostic System CD-ROM into the CD-ROM drive of the computer.
- 3.** Double-click the Computer (My Computer) icon, and then the CD-ROM drive icon to start up the installer.
- 4.** If installing on a 32-bit OS, double-click the folder labeled [32bitEdition].
If installing on a 64-bit OS, double-click the folder labeled [64bitEdition].

- 5.** Double-click the [setup] icon.



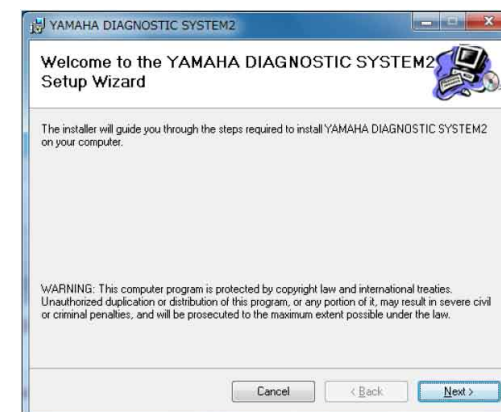
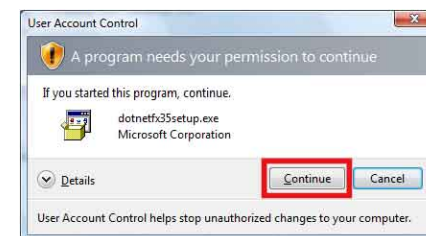
6. The installer will automatically install the required components if they are not installed. If these components are already installed, proceed to step 8.

7. The **License agreement** screen will appear. If you accept the terms of the agreement, click [Accept] to continue.

TIP:

- If a dialog box prompting you to restart the computer appears, click [Yes] to restart the computer.
- If you are using Windows Vista and the **User Account Control** dialog box appears, click [Continue] to continue.
- In the following cases, an error message will appear and the installation will be canceled.
 - When attempting to install the 32-bit version on a 64-bit version of Windows 7.
 - When attempting to install the 64-bit version on a 32-bit version of Windows XP, Windows Vista, or Windows 7.

8. The **YAMAHA DIAGNOSTIC SYSTEM2 Setup Wizard** appears. Click [Next] to continue.



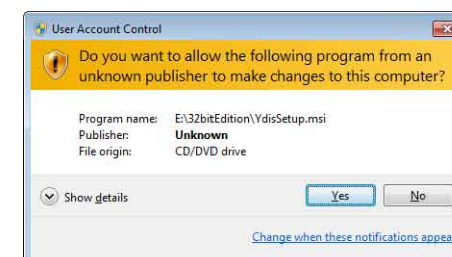
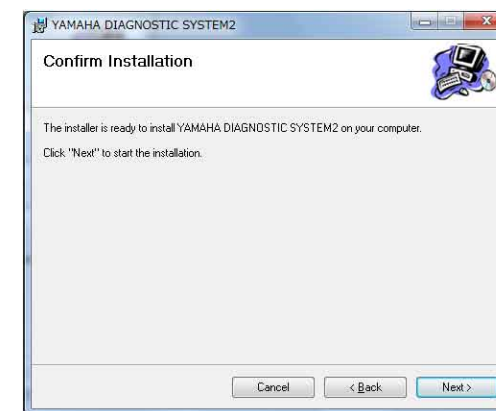
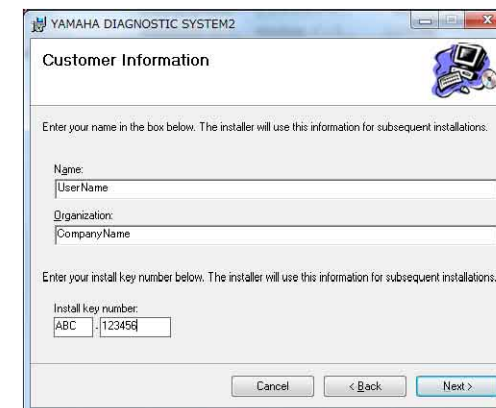
- 9.** The **Customer Information** window appears. Enter the Name, Organization, and Install key number, and then click [Next].

TIP: _____

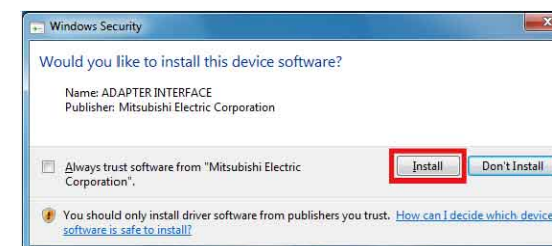
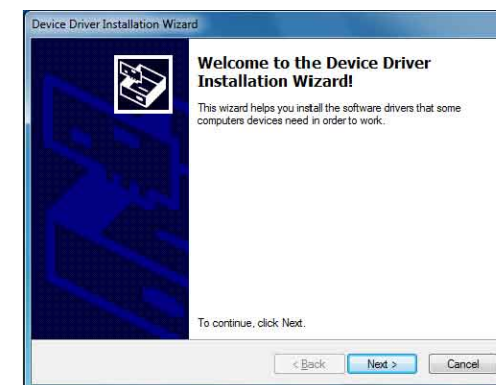
- Entering the wrong Install key number will cause an error message to appear and cancel the installation.
- The Install key number is printed on the back page of the CD-ROM booklet.

- 10.** The **Confirm Installation** window appears. Click [Next] to start the installation process.

- 11.** If you are using Windows Vista or Windows 7 and the **User Account Control** dialog box appears, click [Yes] to continue.



- 12.** After the installation is completed, the **Installation Complete** dialog box appears. Click [Close] to quit the installation program.
- 13.** The installer will automatically detect if device driver installation is required. If you need to install the device driver, the **Device Driver Installation Wizard** will appear. Click [Next] to continue.
- 14.** The installation confirmation dialog box appears. Click [Install] to start the driver installation.



TIP: _____

If you are using Windows XP, click [Continue Anyway].

- 15.** The **Completing the Device Driver Installation Wizard** appears. Click [Finish] to close the wizard.

TIP: _____

The installation has not been completed yet.

- 16.** Connect the adapter to the computer using the USB cable. For connection procedures, see “[Connecting the computer to the watercraft.](#)”

- 17.** For Windows Vista or Windows 7, the device driver will be installed automatically. Once the device driver installation has been completed, you will see a message on the Windows task bar.

TIP: _____

For Windows Vista or Windows 7, the YAMAHA Diagnostic System installation has been completed.

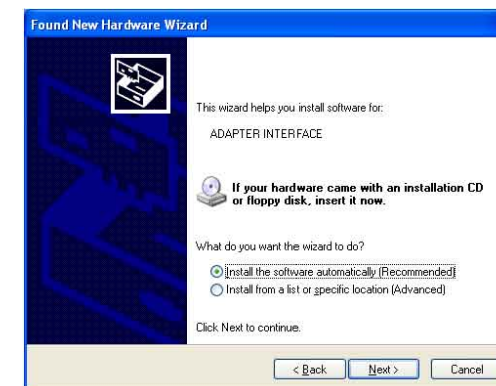
Windows XP



18. For Windows XP, the **Found New Hardware Wizard** appears. Select “No, not this time” and click [Next] to continue.



19. Select “Install the software automatically [Recommended]” and click [Next].



20. The installation confirmation dialog box appears. Click [Continue Anyway] to continue.



21. Once the installation has been completed, the **Completing the Found New Hardware Wizard** dialog box appears. Click [Finish] to close the wizard.

TIP: _____

Make sure to use the same USB port as the one used during the device driver installation. Otherwise, the USB port will not recognize the YAMAHA Diagnostic System.



Connecting the computer to the watercraft

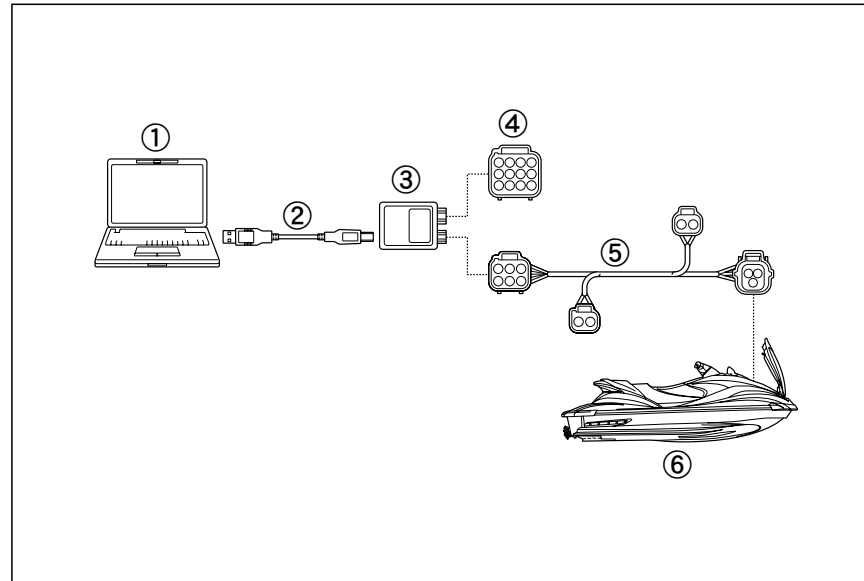
Connect the computer to the watercraft.

TIP:

- Before starting the YAMAHA Diagnostic System every first time after turning on the computer, quit any other applications that are running.
- When connecting, ensure you use the included cables or harness.
- See the corresponding service manual for information on how to connect.
- When you finish all the YAMAHA Diagnostic System operations, make sure to remove the USB cable and reattach the coupler cap of the watercraft.
- If using the adapter, make sure that you have installed the device driver.
- Check that all electrical connections are secure and free from corrosion, and that the battery is fully charged.
- When not connecting an AD harness (for external input) to the adapter, then replace the adapter cap to prevent water from entering.

1. Basic connections

1. Connect the adapter to your computer using the included USB cable.
2. Connect the adapter to the watercraft using a K-Line harness.



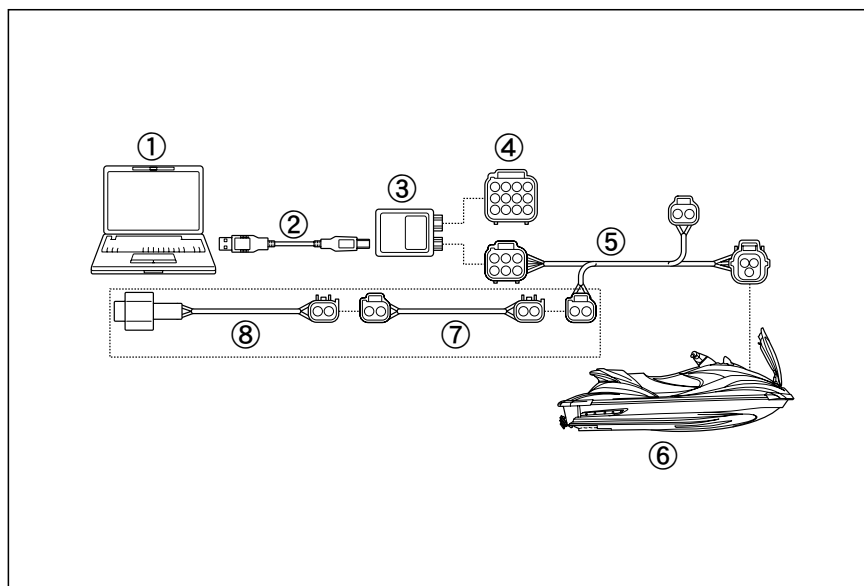
- | | |
|-------------|------------------|
| ① Computer | ④ Adapter cap |
| ② USB cable | ⑤ K-Line harness |
| ③ Adapter | ⑥ Watercraft |

2. When logging

1. Connect the adapter to your computer using the included USB cable.
2. Connect the adapter to the watercraft using a K-Line harness.

TIP: _____

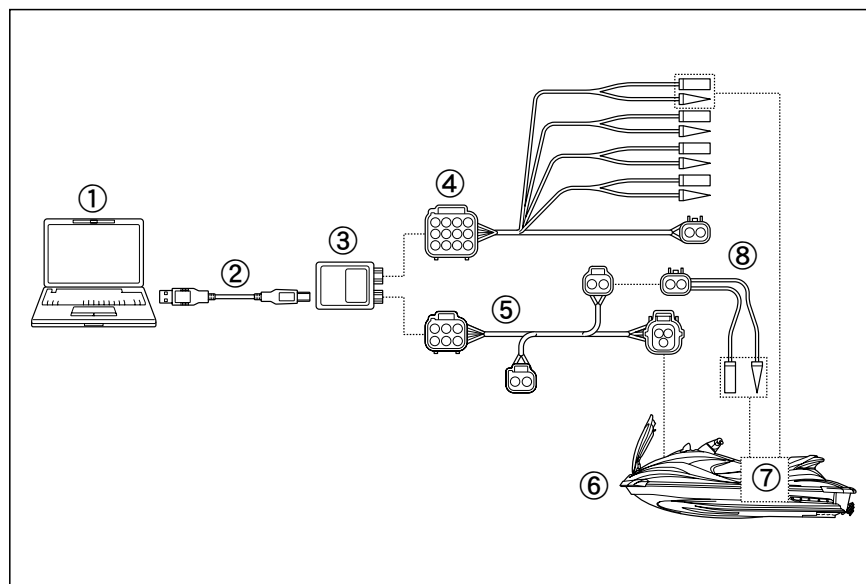
Use of the trigger switch harness and the trigger switch extension harness will be possible when the function to stop logging is added.



- | | |
|---------------|------------------------------------|
| ① Computer | ⑤ K-Line harness |
| ② USB cable | ⑥ Watercraft |
| ③ Adapter | ⑦ Trigger switch extension harness |
| ④ Adapter cap | ⑧ Trigger switch harness |

3. When viewing input values using external devices

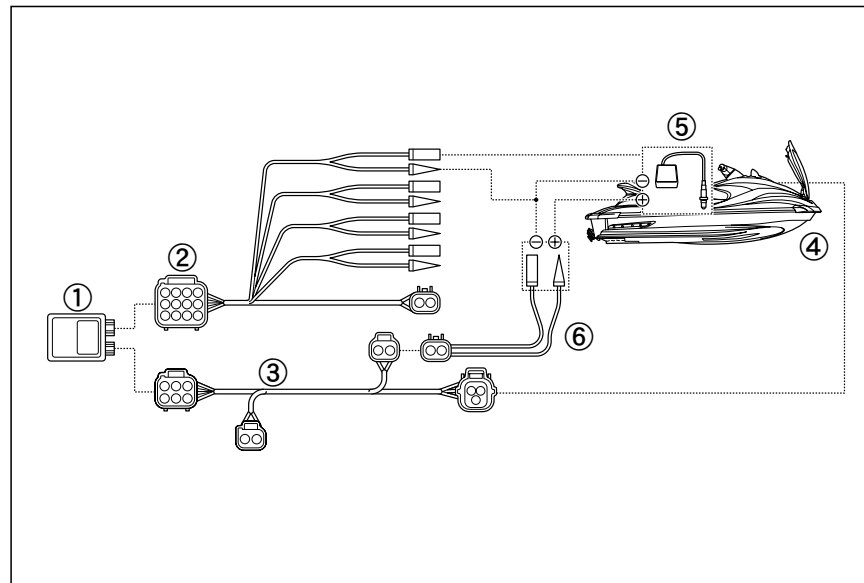
1. Connect the external device to the watercraft.
2. Connect the adapter to your computer using the included USB cable.
3. Connect the adapter to the watercraft using a K-Line harness.
4. Connect the adapter to the AD harness.
5. Connect the external device to the harness.
6. Connect the external device to the K-Line harness using the power supply harness.



- | | |
|--------------|------------------------|
| ① Computer | ⑤ K-Line harness |
| ② USB cable | ⑥ Watercraft |
| ③ Adapter | ⑦ External device |
| ④ AD harness | ⑧ Power supply harness |

TIP:

This shows connection examples for devices such as A/F and fuel pressure sensors.



① Adapter

② AD harness

③ K-Line harness

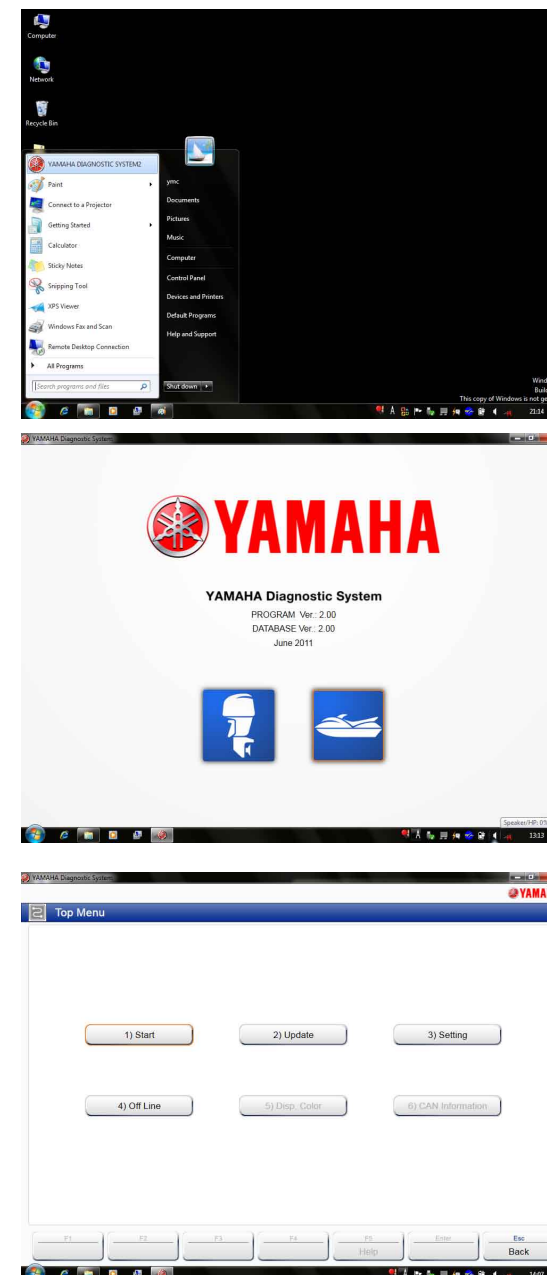
④ Watercraft

⑤ External device

⑥ Power supply harness

Starting the YAMAHA Diagnostic System

1. Push the engine start switch to start or crank the engine.
2. Turn on your computer.
3. Click the [Start] button on the Windows task bar, point to **Programs** or **All Programs**, and then click **YAMAHA DIAGNOSTIC SYSTEM2**.
4. The **YAMAHA Diagnostic System** top screen is displayed.
5. Click the watercraft icon or press the [Enter] key on your keyboard.
6. The **Top Menu** screen is displayed.



Quitting the YAMAHA Diagnostic System

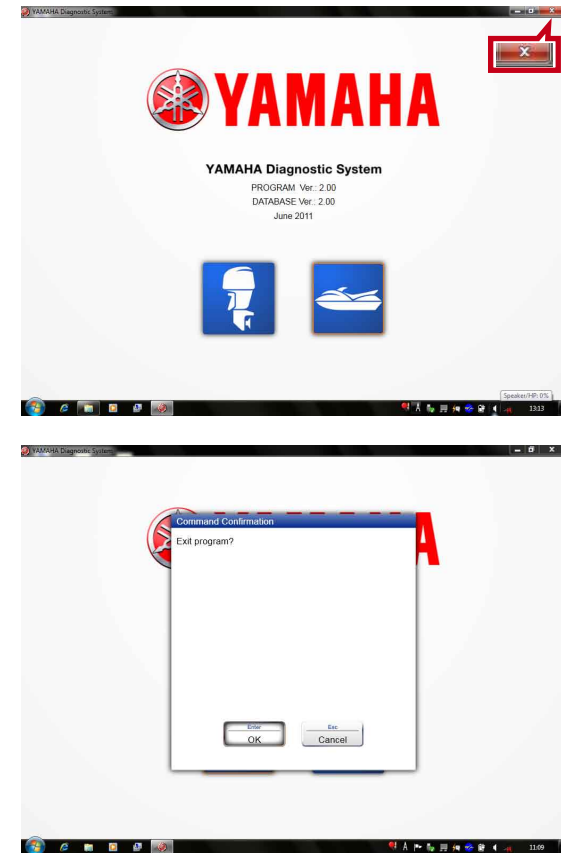
1. Click the [x] button.

2. A confirmation message appears.

3. Click the [OK] button or press the [Enter] key on your keyboard.

TIP: _____

Click the [Cancel] button or press the [Esc] key on your keyboard to cancel the quit command.

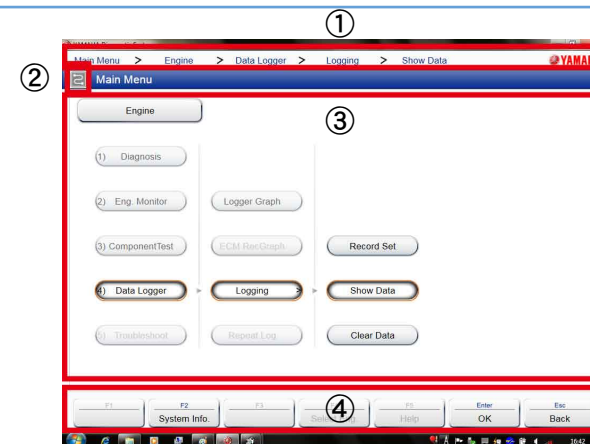


Screen specifications

This explains YAMAHA Diagnostic System screen specifications.

1. Standard screen

This comprises four areas; the title area, the status area, the main area, and the button area.

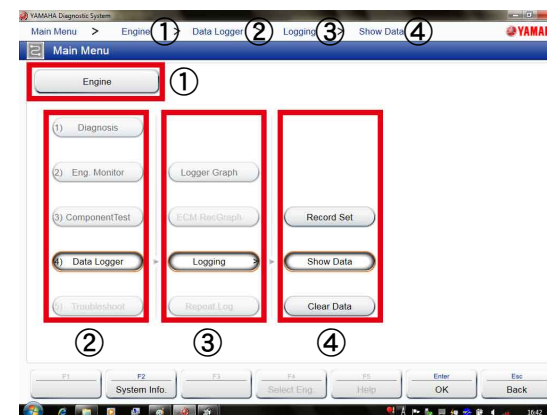


- ① Title area
- ② Status area
- ③ Main area
- ④ Button area

1-1. Title area

This shows the current structure.

From left, these are Main menu → 1st-level menu → 2nd-level menu → 3rd-level menu → 4th-level menu.



- ① 1st-level menu
- ② 2nd-level menu
- ③ 3rd -level menu
- ④ 4th-level menu

1-2. Status area

This shows the communications status between the YAMAHA Diagnostic System and the watercraft.



- ① Offline: The icon is gray.
- ② Communicating: The icon is blue, with a turning white border.
- ③ Communications error: The icon is blue, overlaid by a flashing red x.

1-3. Main area

Each of these functions displays menu structure, buttons, keys, parameter values, and messages.

Select the buttons in the main area by either clicking a button or pressing arrow keys on your keyboard. Click the [OK] button or press the [Enter] key on your keyboard to confirm.



- ① Button not selected: embossed blue border
- ② Button selected: embossed orange border
- ③ Command has been executed: engraved orange border

1-4. Button area

This has seven buttons, and these are assigned from the left to F1–F5 on the computer keyboard.

Either click these, or use the assigned function keys on the computer keyboard to operate.



2. Sub screen

This displays confirmation of operations, designations of actions, and error messages within the Main screen area.

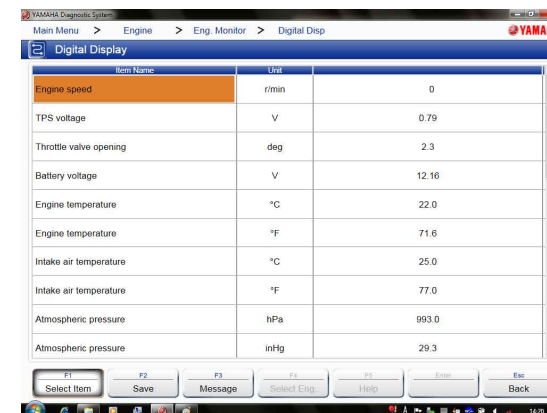


Common operations

1. Selecting the display items

You can select display items or change the display order on the digital and graph displays.

1. Display the **Digital Display** screen or **Graph Display** screen.
2. Click the [Select Item] button or press the [F1] key on your keyboard.



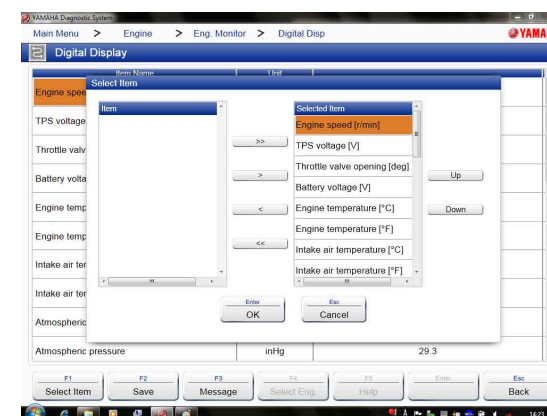
1-1. Display items

You can hide the items that you do not wish to display on the Engine Monitor screen.

1. The **Select Item** window appears.
2. Select an item that you do not wish to display by either clicking it or pressing the up or down arrow keys on your keyboard.

TIP: _____

At initialization, all items are displayed.

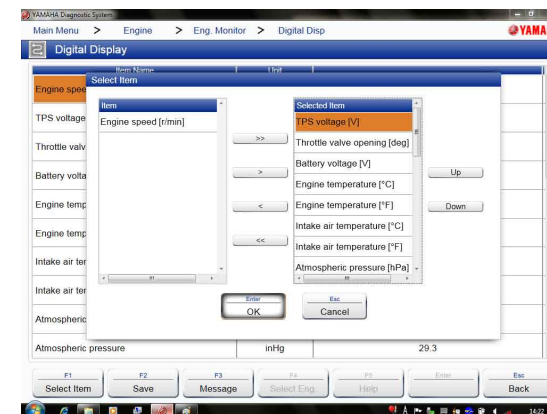


3. Press the space bar to change displayed items to undisplayed items.

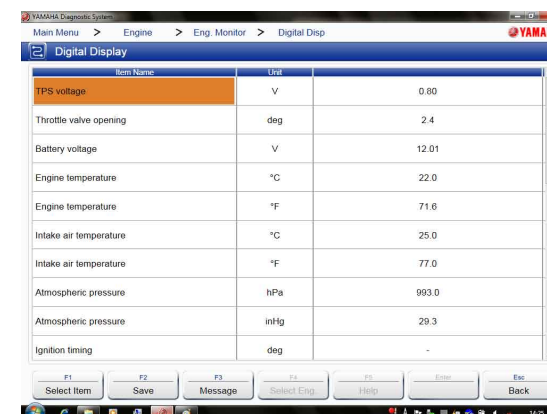
4. Click the [OK] button or press the [Enter] key on your keyboard.

TIP:

- Click the [>] button or press the space bar to change undisplayed items to displayed items again.
- The item added to the displayed items will appear at the bottom of the list.
- Click the [<<] button to move all displayed items to undisplayed items.
- Click the [>>] button to move all undisplayed items to displayed items.
- Click the [Cancel] button or press the [Esc] key on your keyboard to cancel the selection.



5. The item is not displayed on the screen.



1-2. Display order

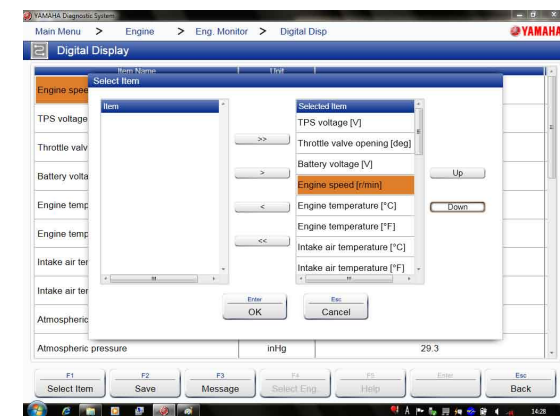
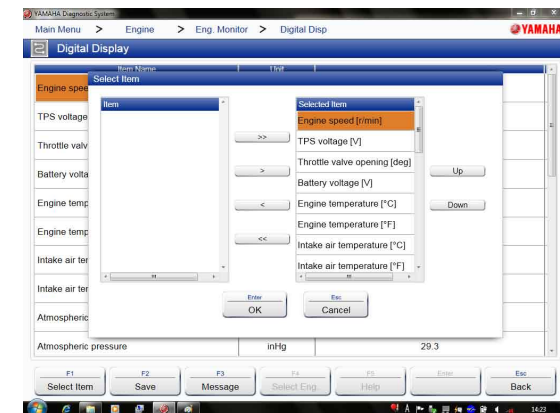
You can change the display order of the items.

1. Display the **Select Item** window.

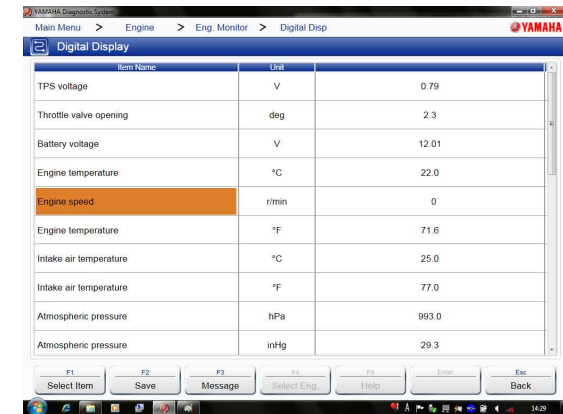
- 2.** Select an item for which you wish to change the display order by either clicking it or pressing the up or down arrow keys on your keyboard.
- 3.** Click the [Down] button to move the selected item downward, and click the [Up] button to move upward.
- 4.** Click the [OK] button or press the [Enter] key on your keyboard.

TIP:

Click the [Cancel] button or press the [Esc] key on your keyboard to return to the previous state.



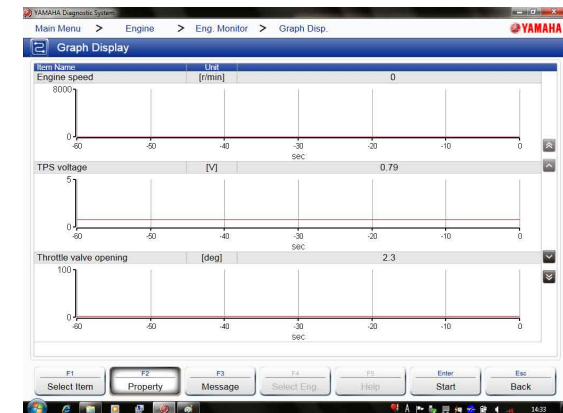
5. The display order of the items on the screen has been changed.



2. Setting the graph properties

You can change the value and color for the graph displayed on the Graph Display.

1. Display the **Graph Display** screen.
2. Click the [Property] button or press the [F2] key on your keyboard.



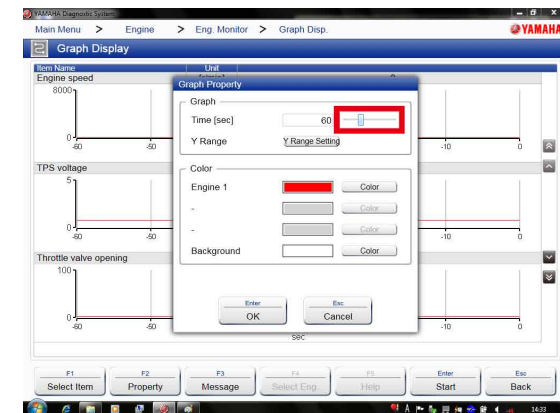
2-1. Display range

You can change the display range for the X and Y axis.

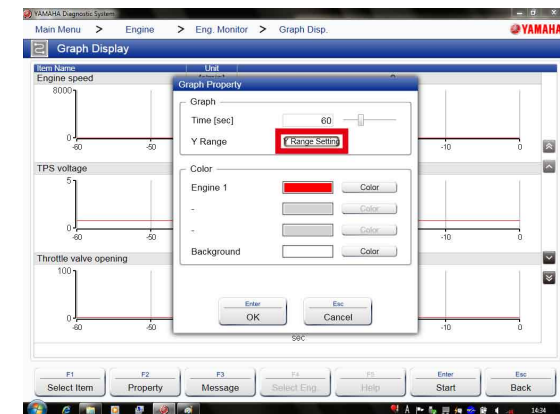
1. Display the **Graph Property** window.
2. Set the width for the X axis using the slider in the **Graph Property** window.

TIP:

Select from 4 widths: 10 sec, 60 sec, 300 sec, 600 sec



3. Click the [Y Range Setting] button in the Graph Property window.



4. The **Graph Range** window appears.
5. Select the item that you wish to change the Y axis width setting for by either clicking it or pressing the up or down arrow keys on your keyboard, and then press the space bar.
6. Enter the minimum and maximum values of the selected item into the text boxes.
7. Click the [Set] button to reflect the changes.
8. Click the [OK] button or press the [Enter] key on your keyboard.

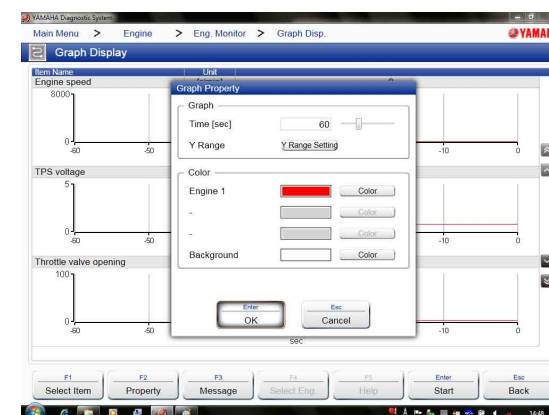
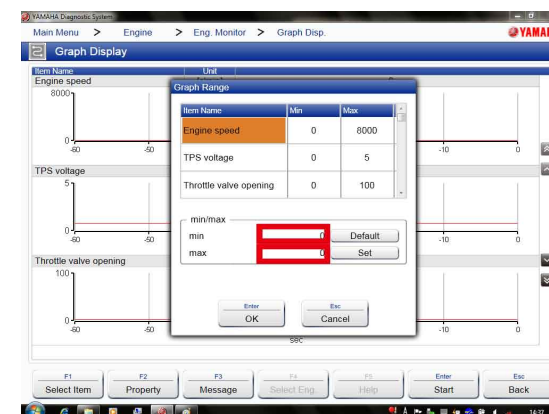
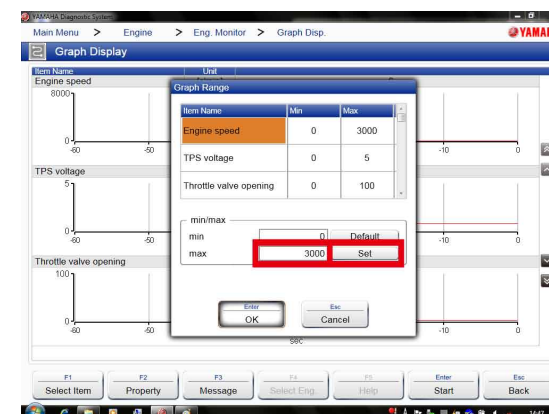
TIP: _____

- If the entered values are out of the setting range, the borders of the text boxes turn red.
- Click the [Default] button to return the setting value of the selected item to the default value.

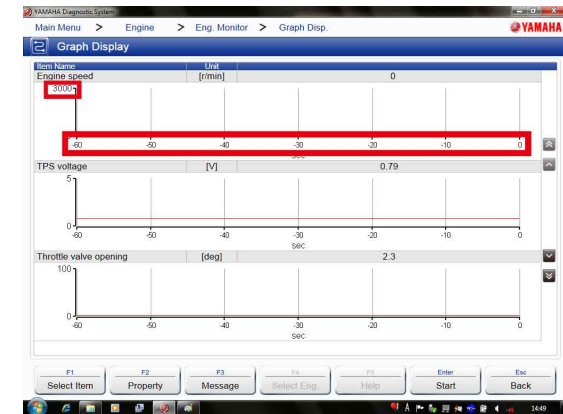
9. Click the [OK] button or press the [Enter] key on your keyboard.

TIP: _____

Click the [Cancel] button or press the [Esc] key on your keyboard to restore all default settings.



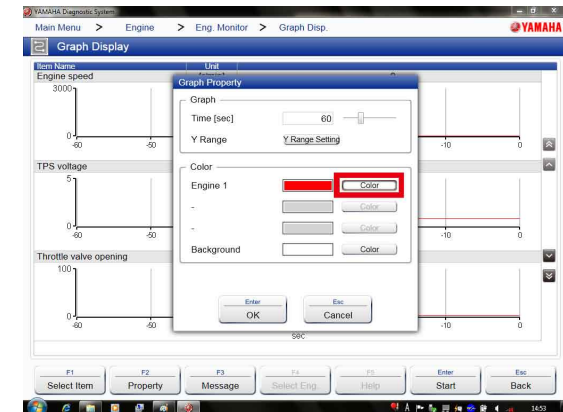
10. The setting values of the X and Y axis have been changed.



2-2. Display colors

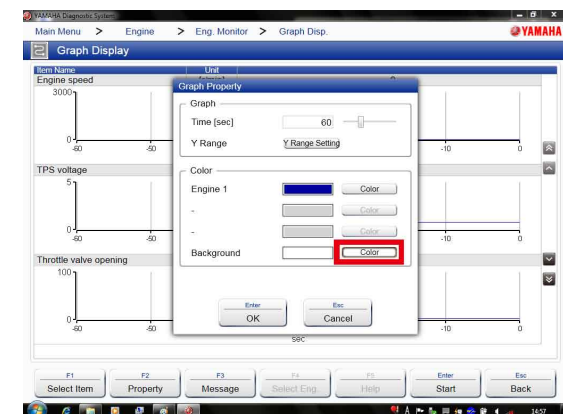
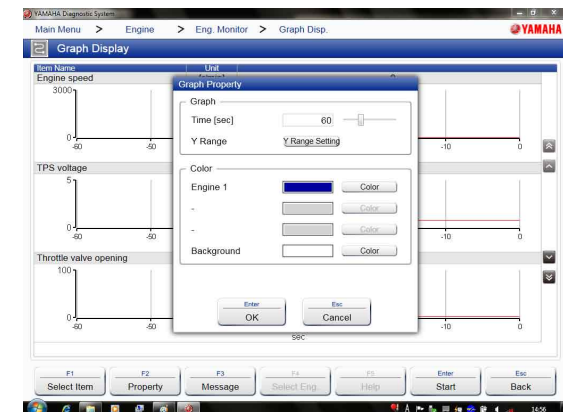
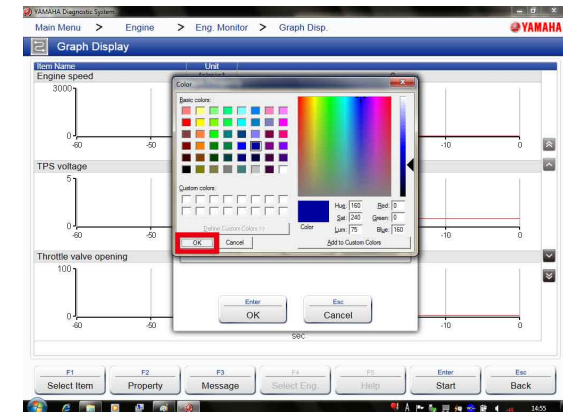
You can change the line color and background color of the graph.

1. Display the **Graph Property** window.
2. Click the [Color] button for line color in the Color group.



Common operations

3. The **Color** selection window appears.
4. Select a color and click the [OK] button.
5. The color of the box in the left of the [Color] button changes.
6. Click the [Color] button for the Background in the Color group.



Common operations

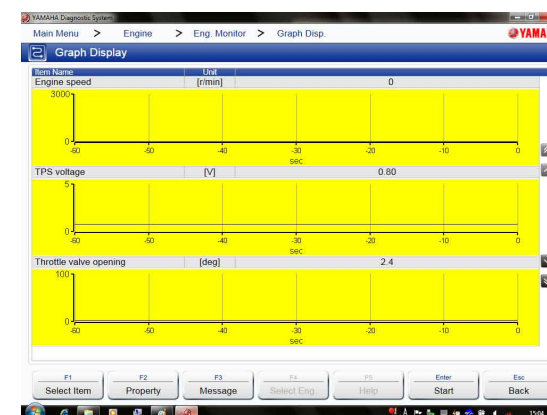
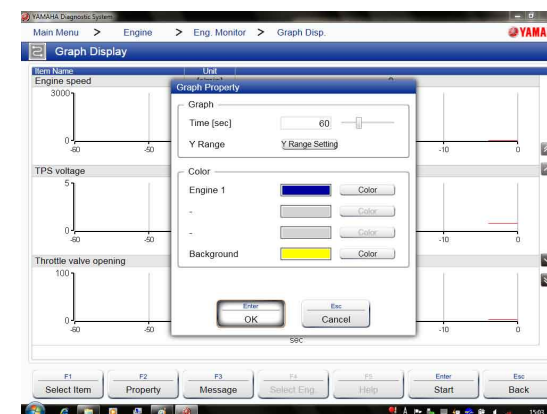
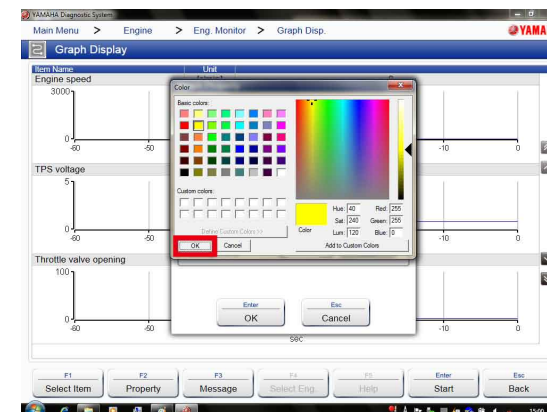
7. The **Color** selection window appears.
8. Select a color and click the [OK] button.

9. The color of the box to the left of the [Color] button changes.
10. Click the [OK] button or press the [Enter] key on your keyboard.

TIP:

Click [Cancel] button or press the [Esc] key on your keyboard to restore all default settings.

11. The line color and background color in the graph on the screen have been changed.



3. Saving data

3-1. Data save

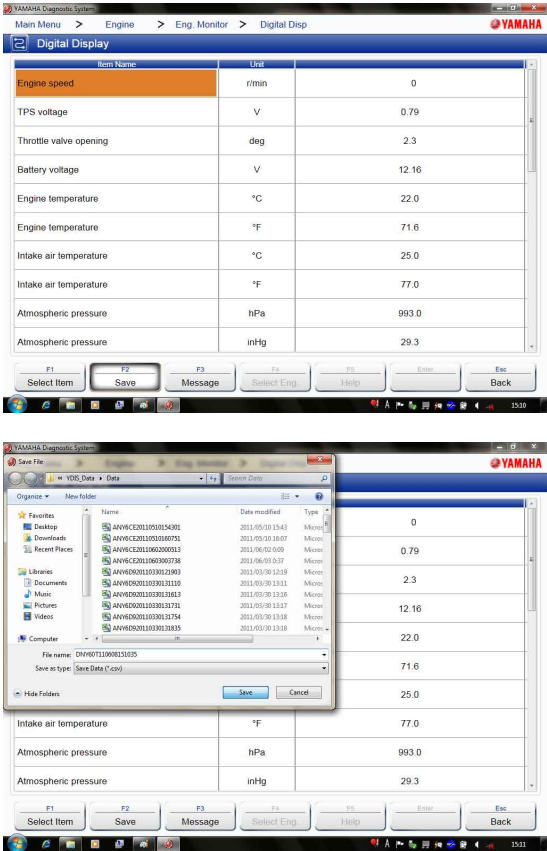
By selecting the Save command in the Diagnosis, Engine Monitor, or Data Logger function, the corresponding data can be saved on a disk.

- 1. Click the [Save] button or press the [F2] key on your keyboard.
- 2. The **Save File** window is displayed.
- 3. Select the disk and folder where the data will be saved and assign a file name.
- 4. Click the [Save] button or press the [Enter] key on your keyboard to save data.

Saved file	DNY	+	First 3 letters of the ECM number	+	Year, month, day, hour, minute, second	+	.csv .xls (*1)
Engine Monitor file	LNY						
ECM record graph file	RNY						
Logging file	ANY						

(*1) Except ECM record graph file.

TIP: _____
The default file name is assigned as in the list above.



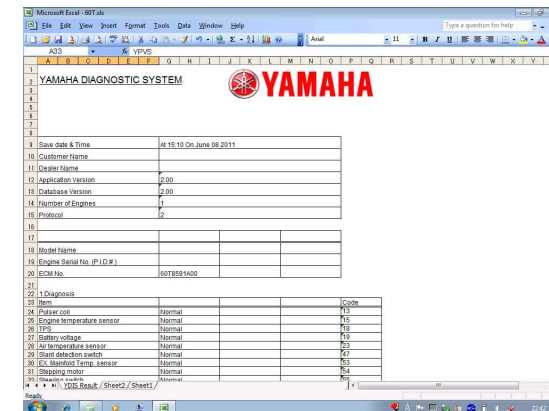
3-2. Data export

The data you saved can be viewed in Microsoft Excel.

TIP:

- If Microsoft Office is not installed on your computer: The program saves the data in CSV format.
- If Microsoft Office is installed on your computer: The program saves the data in both CSV format and Excel format. If Microsoft Excel (version 2003 or later) is installed on your computer, you can save the data onto a one-page US Letter-size form as shown in the screen capture on the right.
- Files in csv format are used for graph display. Use Notepad to open these files.
- Do not change the CSV data. Otherwise, it cannot be read by the system.

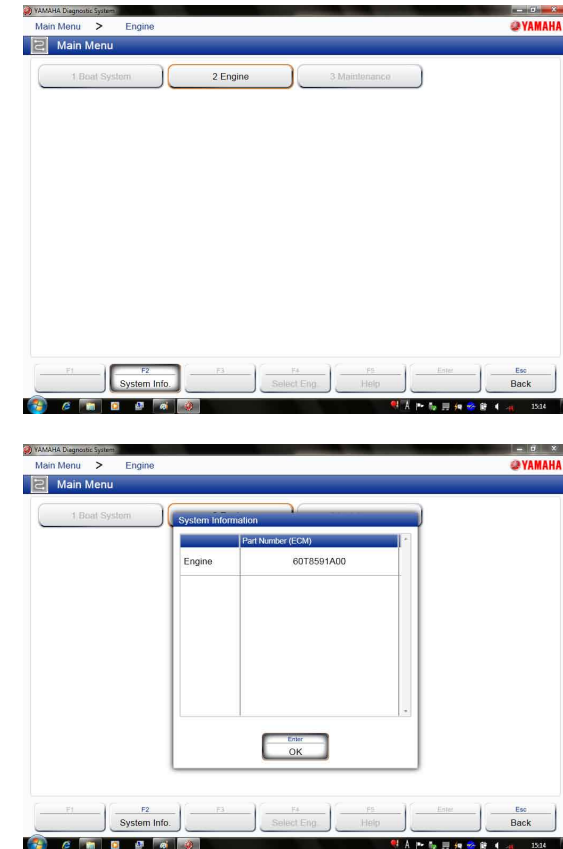
Save data as Excel



4. System Info. button

Displays the ECM number of the connected device.

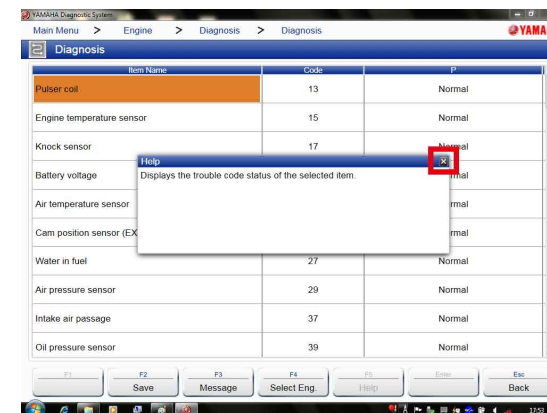
1. Click the [System Info.] button or press the [F2] key on your keyboard.
2. The **System Information** dialog box appears.
3. Click the [OK] button or press the [Enter] key on your keyboard.



5. Message button

A message for each function is displayed.

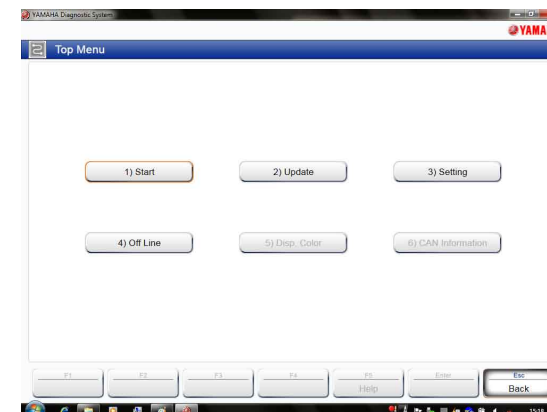
1. Click the [Message] button or press the [F3] key on your keyboard.
2. A message appears.
3. Click the [x] button to close the message.



6. Back button

You can return to the previous display using this button.

1. Click the [Back] button or press the [Esc] key on your keyboard.



Update

You can update the database when update information is provided.

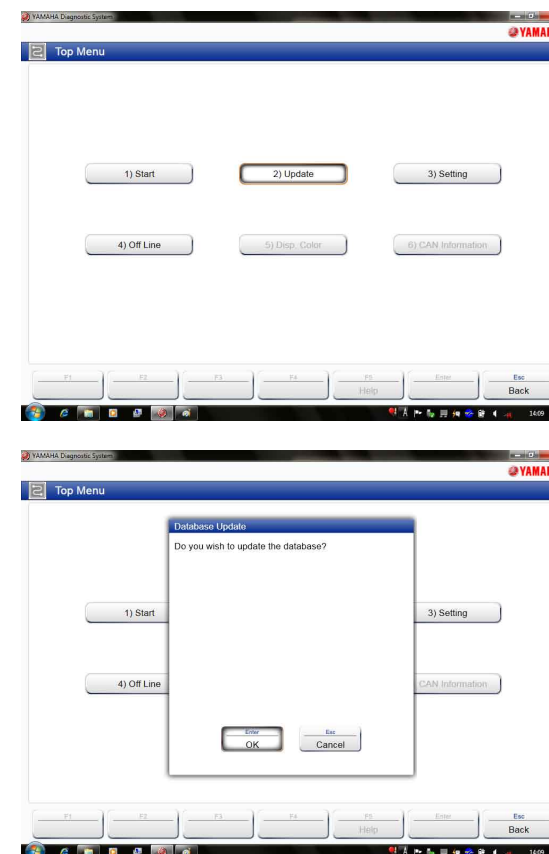
1. Display the **Top Menu** screen.
2. Click the [2) Update] button or press the [2] or [Enter] key on your keyboard.

3. A confirmation message appears.

4. Click the [OK] button or press the [Enter] key on your keyboard.

TIP: _____

Click the [Cancel] button or press the [Esc] key on your keyboard to cancel the update.



5. The folder selection window appears.
6. Select the folder that contains the database.
7. Click the [OK] button or press the [Enter] key on your keyboard.

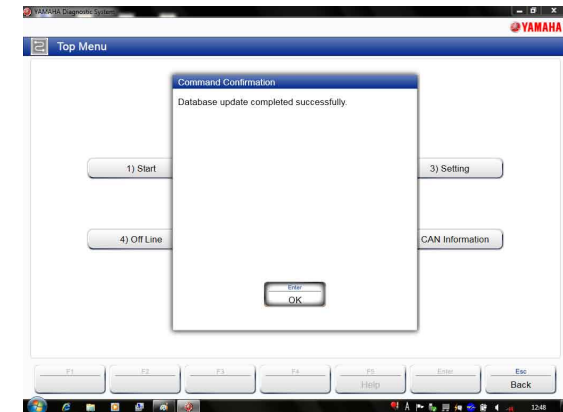
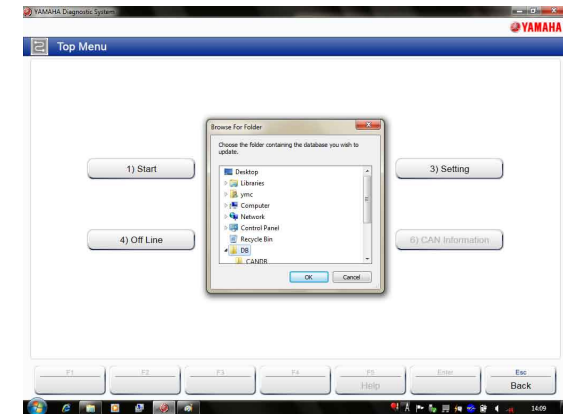
TIP: _____

Click the [Cancel] button or press the [Esc] key on your keyboard to cancel the update.

8. A confirmation message appears.
9. Click the [OK] button or press the [Enter] key on your keyboard.

TIP: _____

If the update failed, an error message appears. Follow the instructions on screen.



Setting

You can change the display language and the display unit (on the Engine Monitor and during off-line operation).

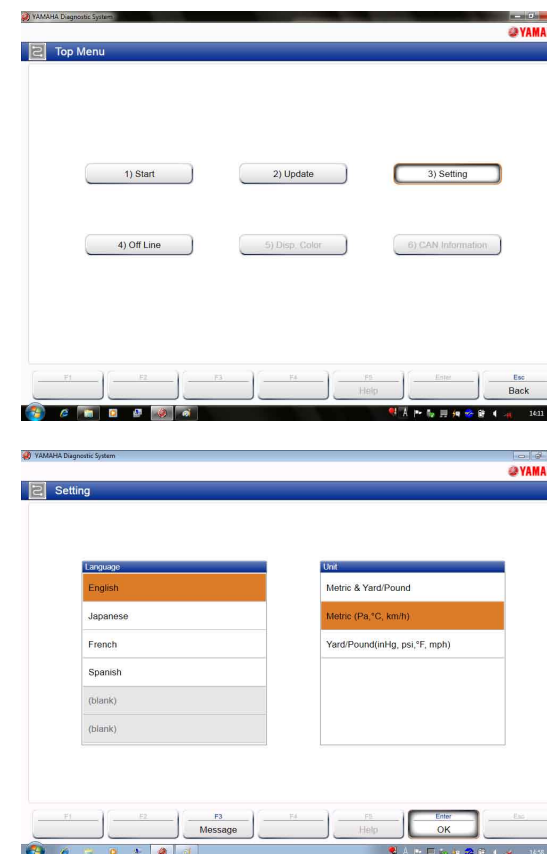
1. Display the **Top Menu** screen.
2. Click the [3) Setting] button or press the [3] or [Enter] key on your keyboard.

3. The **Setting** screen is displayed.

4. Select a language and unit to use and click the [OK] button or press the [Enter] key on your keyboard.

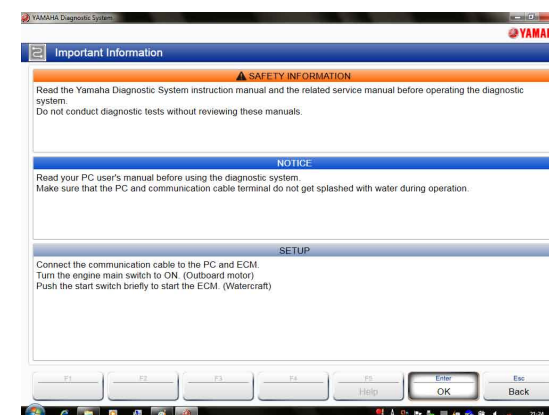
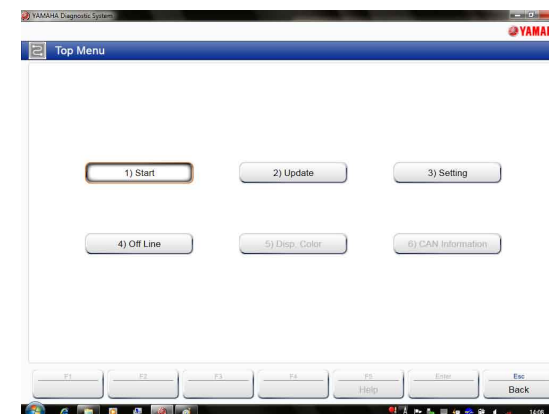
TIP:

You cannot select display units.



1. Diagnosis

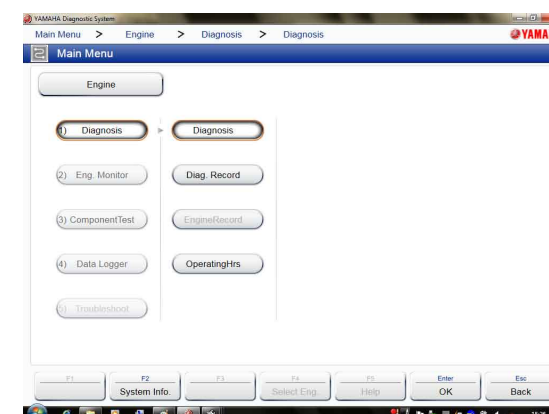
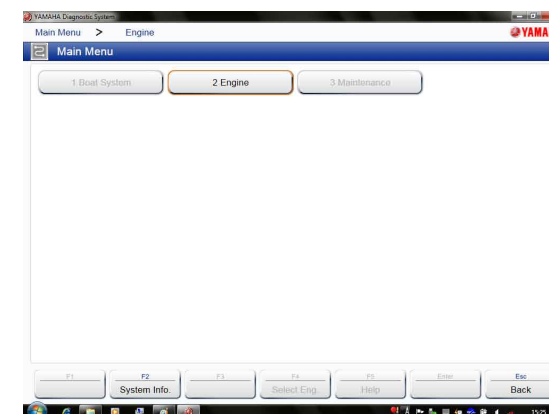
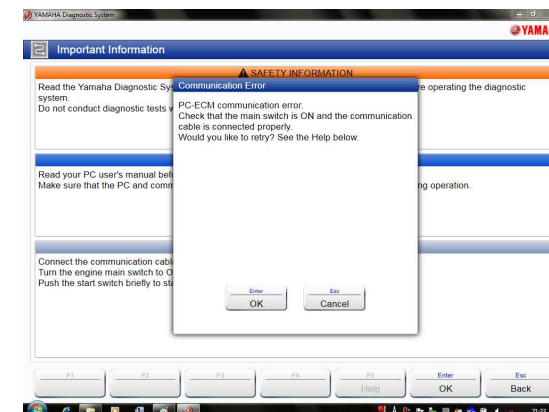
1. Display the **Top Menu** screen.
2. Click the [1) Start] button or press the [1] or [Enter] key on your keyboard.
3. The **Important Information** screen is displayed.
4. Read the contents, and then click the [OK] button or press the [Enter] key on your keyboard.



TIP: _____

If a communication error has been detected, an error message appears.
Follow the instructions on screen.

5. The **Main Menu** screen is displayed.
6. Click [2 Engine] button or press the [2] or [Enter] key on your keyboard.
7. The Engine menu is displayed.
8. Click the [1) Diagnosis] button in the 2nd-level menu or press [1], [Enter], or right arrow key on your keyboard.
9. The 3rd-level menu is displayed.



1-1. Diagnosis

The diagnosis codes of malfunctions recorded in the ECM of the watercraft, corresponding part names of the diagnosis codes, the results of the diagnosis, and the condition of the part are listed here.

Some items may not be available depending on the model of the watercraft. See the corresponding service manual for further information.

Diagnosis codes and items

Code No.	Item
13	Pulser coil(*1)
15	Engine temperature sensor
17	Knock sensor
18	TPS
19	Battery voltage
22	Atmospheric pressure sensor
23	Air temperature sensor
24	Cam position sensor(EX)
29	Air pressure sensor
47	Slant detection switch
53	EX. manifold temp. sensor

Code No.	Item
54(*2)	Stepping motor
54(*2)	Bypass valve motor
55(*2)	Steering switch
55(*2)	Steering sensor
63	Intake system
64	YPVS
65	EX. manifold water temp sensor
66	Stepping motor operation 1
67	Stepping motor operation 2
68	No-wake mode switch
75	No-wake/Cruise assist SW(+)

Code No.	Item
76	No-wake/Cruise assist SW(-)
78	Reverse switch
112-119	ETV
121-123	ETV
124-128	TPS
129	ETV
131-135	APS
136-139	ETV
141-145	ETV

Refer to "Functions by model" for detailed information.

(*1) Pickup coil

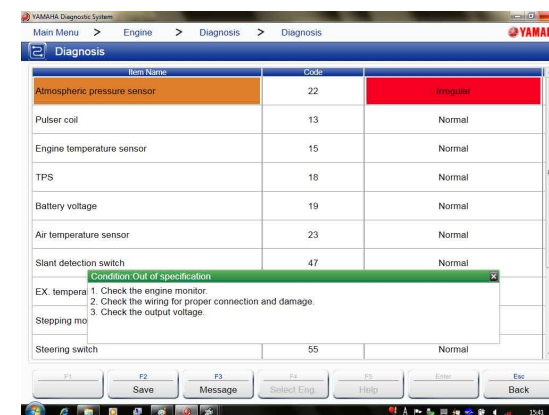
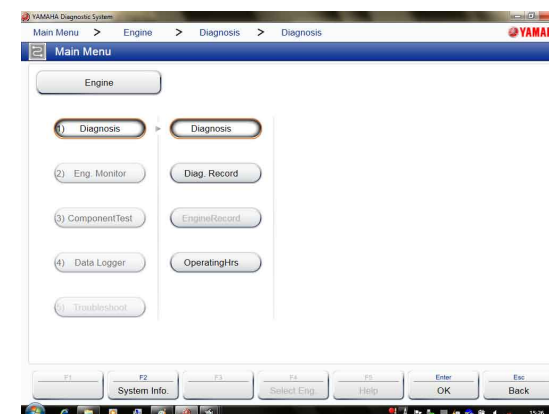
(*2) The item varies depending on the model.

1. Display the 3rd-level menu.
2. Click the [Diagnosis] in the 3rd-level menu or [OK] button, or press the [Enter] key on your keyboard.

3. The **Diagnosis** screen is displayed.

TIP: _____

- The cell will change to a red color and a message will be displayed for items deemed as being irregular.
- Items deemed as being irregular will be displayed at the top of the list. Three-digit codes are displayed above two-digit codes.
- Select the item deemed as being irregular by either clicking it or pressing the up or down arrow keys on your keyboard, and display the diagnosis procedure.



1-2. Diagnosis Record

The diagnosis codes of malfunctions that have been recorded in the ECM, corresponding items of the diagnosis codes, and the time when the malfunctions occurred are listed here.

Some items may not be available depending on the model of the watercraft. See the corresponding service manual for further information.

Diagnosis record codes and items

Code No.	Item
13	Pulser coil(*1)
15	Engine temperature sensor
17	Knock sensor
18	TPS
19	Battery voltage
22	Atmospheric pressure sensor
23	Air temperature sensor
24	Cam position sensor(EX)
29	Air pressure sensor
47	Slant detection switch
53	EX. manifold temp. sensor
54(*2)	Stepping motor

Code No.	Item
54(*2)	Bypass valve motor
55(*2)	Steering switch
55(*2)	Steering sensor
59	Memory data
63	Intake system
64	YPVS
65	EX.manifold water temp sensor
66	Stepping motor operation 1
67	Stepping motor operation 2
68	No-wake mode switch
75	No-wake/Cruise assist SW(+)
76	No-wake/Cruise assist SW(-)

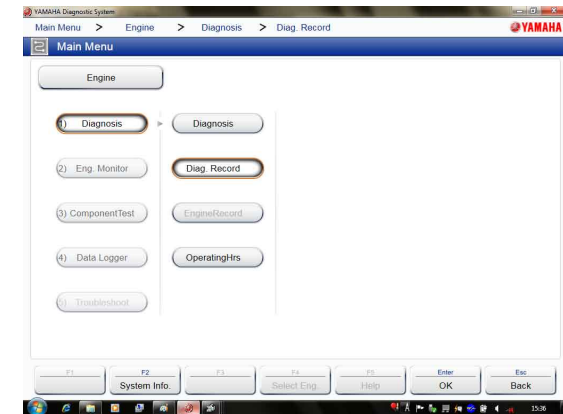
Code No.	Item
78	Reverse switch
112–119	ETV
121–123	ETV
124–128	TPS
129	ETV
131–135	APS
136–139	ETV
141–145	ETV
252	Overheat alert
253	Low oil pressure alert

Refer to “Functions by model” for detailed information.

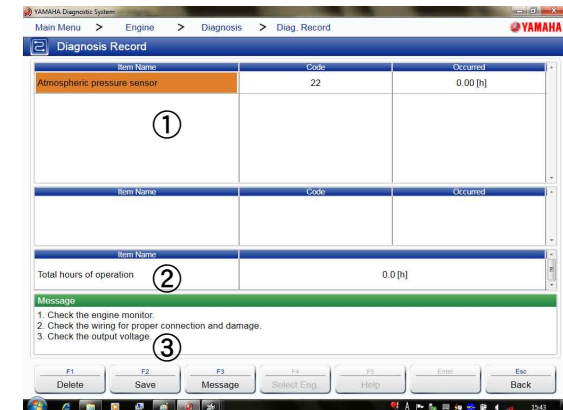
(*1) Pickup coil

(*2) The item varies depending on the model.

- 1.** Display the 3rd-level menu.
- 2.** Click the [Diag. Record] button in the 3rd-level menu or [OK] button, or press the [Enter] key on your keyboard.



- 3.** The **Diagnosis Record** screen is displayed.



- ① Displays diagnosis codes information.
- ② Shows total hours of operation.
- ③ Displays the checking procedure for the selected diagnosis code.

■ Deleting diagnosis record in the ECM

You can delete the displayed diagnosis record.

1. Select the item that you wish to delete by either clicking it or pressing the up or down arrow keys on your keyboard.
2. Click the [Delete] button or press the [F1] key on your keyboard.

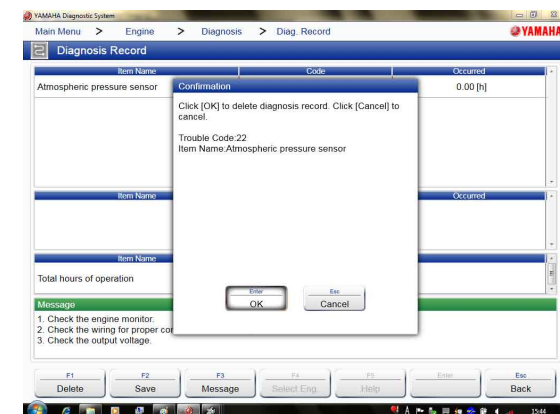
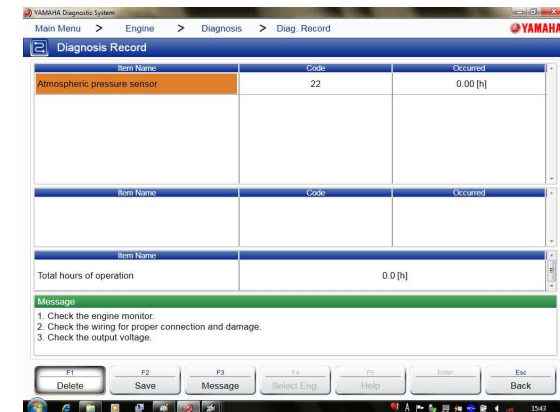
TIP:

Check that the items deleted are normal in the Diagnosis screen. If the items remain irregular, they will appear as irregular in the Diagnosis Record even if you try to delete them.

3. A confirmation message appears.
4. Click the [OK] button or press the [Enter] key on your keyboard.

TIP:

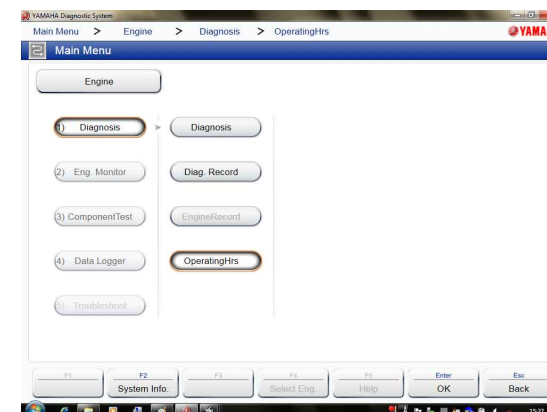
To cancel deletion, click the [Cancel] button or press the [Esc] key on your keyboard.



1-3. Engine operating hours

The operating hours as compared to the engine speed and the total operating hours are displayed.

1. Display the 3rd-level menu.
2. Click the [OperatingHrs] button in the 3rd-level menu or press the [Enter] key on your keyboard.



3. The **Engine operating hours by RPM** screen is displayed showing the number of hours that the engine was operated at each engine speed range.

TIP:

- Even when the engine is running, the time displayed is the total operating hours up until the Engine operating hours by RPM was displayed.
- The total operating hours are rounded up to one decimal place, and so are not equal to the total of the various operating times.

Engine Speed	Hours
< 2000 r/min	0.05 [h]
2000 - 4000 r/min	0.11 [h]
4000 - 6000 r/min	0.02 [h]
6000 - 8000 r/min	0.04 [h]
8000 - 10000 r/min	0.00 [h]
10000 - 12000 r/min	0.00 [h]
Total hours of operation	0.2 [h]

2. Engine Monitor

⚠ WARNING

Do not use the Engine Monitor function to check the engine condition while operating a watercraft, or you may become distracted, which could result in a collision.

NOTICE

Make sure to avoid splashing water on the computer, adapter, and USB cable and to avoid damaging them with strong sudden jolts or vibration.

Data received from ECM related to each part is displayed while the engine start switch is ON.

Engine monitor items

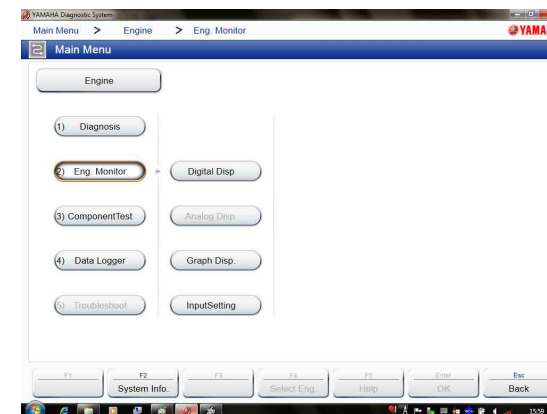
Monitor item
APS 1
APS 2
Atmospheric pressure
Battery voltage
Bypass valve motor
Cruise assist down switch
Cruise assist switch
Cruise assist up switch
Engine speed
Main switch
Engine shut-off switch
Engine temperature
ETV relay

Monitor item
EX. manifold water temperature
EX. manifold temperature
Fuel injection duration
Fuel pump relay
Ignition timing
Air pressure sensor
Air temperature sensor
Main relay
No-wake/Cruise assist SW(+)
No-wake/Cruise assist SW(-)
No-Wake mode switch
Oil pressure switch
Thermoswitch

Monitor item
Slant detection switch
Steering sensor
Steering switch
Stepping motor
TPS 1
TPS 2
Throttle switch
Throttle valve opening angle
TPS voltage
YPVS
Reverse switch

Refer to “Functions by model” for detailed information.

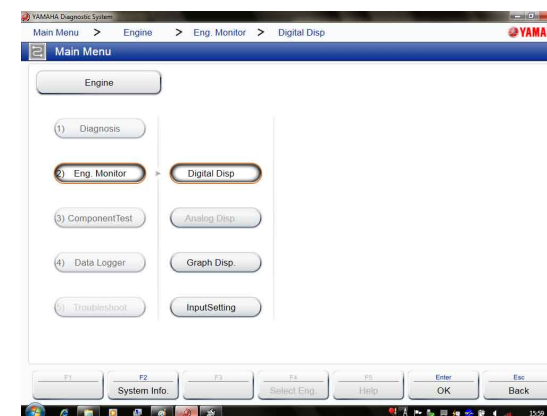
1. Display the Engine menu.
2. Click the [2) Eng. Monitor] button in the 2nd-level menu or press the [2], [Enter], or right arrow key on your keyboard.
3. The 3rd-level menu is displayed.



2-1. Digital Display

The data from the ECM of the watercraft is displayed in numerical value.

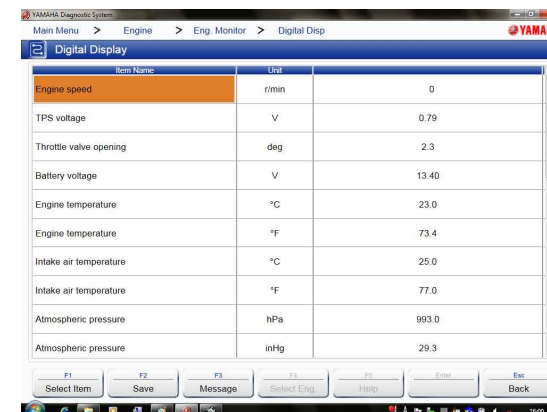
1. Display the 3rd-level menu.
2. Click the [Digital Disp] in the 3rd-level menu or [OK] button, or press the [Enter] key on your keyboard.



3. The current engine condition is displayed in numerical value.

TIP:

- Ten items can be displayed at one time. To view the other items, scroll the display.
- You can change the display items. See “[Selecting the display items.](#)”

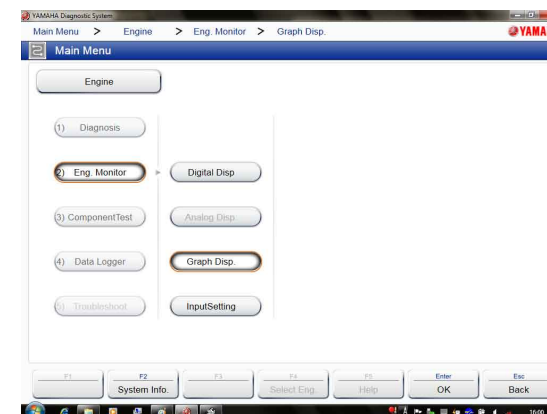


2-2. Graph Display

The data from the ECM of the watercraft is displayed in a graph.

Three graph items can be displayed at one time.

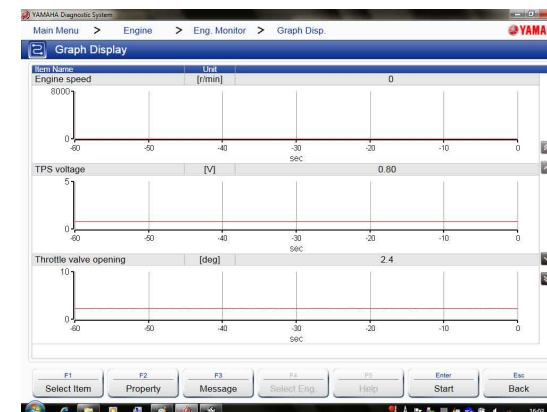
- 1.** Display the 3rd-level menu.
- 2.** Click the [Graph Disp.] in the 3rd-level menu or [OK] button, or press the [Enter] key on your keyboard.



3. The current engine condition is displayed in a graph.

TIP:

- To view other items, click the [] and [] buttons, or press the up or down arrow keys on your keyboard, or click the [] and [] buttons to move through the screens one by one.
- You can change the settings of the graph display. See “[Setting the graph properties.](#)”



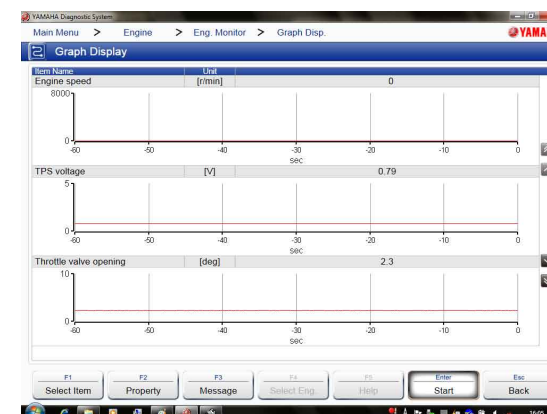
■ Saving graph data

You can save the displayed data on a computer and play it back later.

1. To start saving data, click the [Start] button or press the [Enter] key on your keyboard.

TIP:

When recording starts, the button display switches from [Start] to [Stop].



2. Click the [Stop] button or press the [Enter] key on your keyboard to finish data recording.

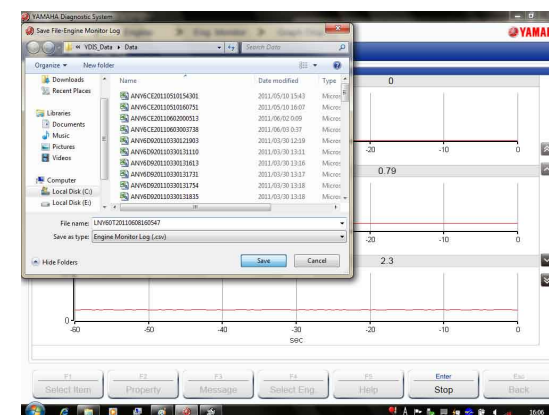
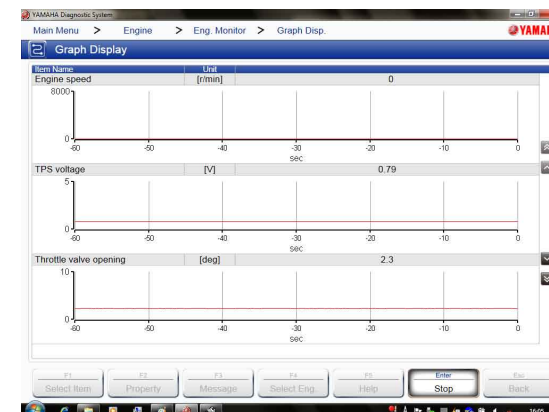
3. The **Save File** window is displayed.

4. Select the disk and folder where the data will be saved and assign a file name.

5. Click the [Save] button or press the [Enter] key on your keyboard to save data.

TIP:

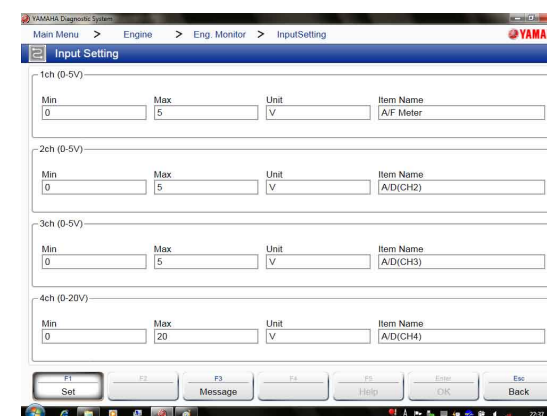
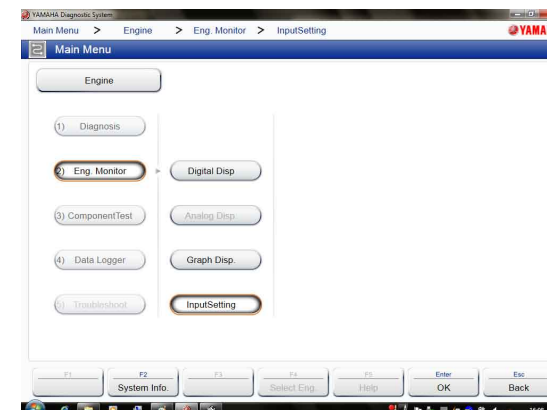
- The program allows you to view saved graph data off-line.
- Click the [Cancel] button or press the [Esc] key on your keyboard to delete recorded data.



2-3. Input Setting

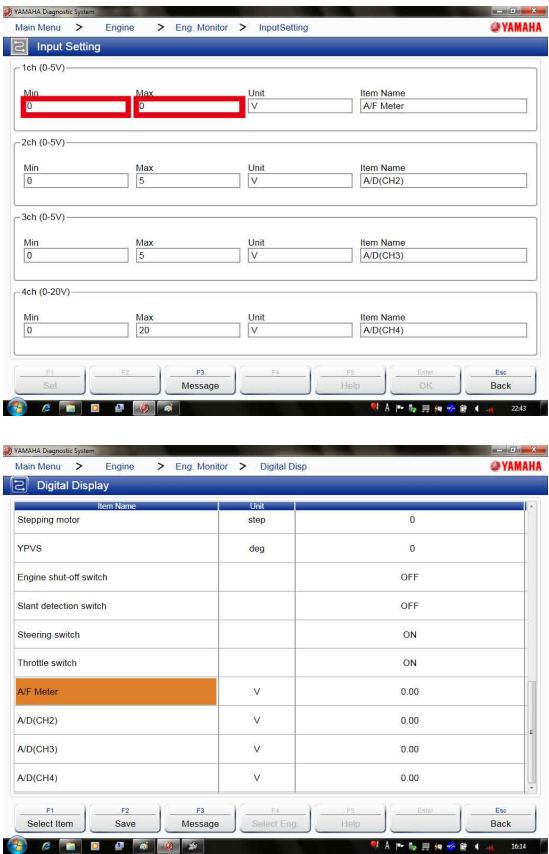
Set the input figures for displaying data on the YAMAHA Diagnostic System screen.

1. Display the 3rd-level menu.
2. Click the [InputSetting] in the 3rd-level menu or [OK] button, or press the [Enter] key on your keyboard.
3. The **Input Setting** screen is displayed.
4. Enter the name of the connected external devices and enter the minimum and maximum values for the graph.
5. Click the [Set] button or press the [Enter] key on your keyboard.



- TIP:** _____
- The textbox frame appears in red if the minimum and maximum values are not entered.
 - Values entered as the minimum and maximum values will return to the default figures when the [Set] button is clicked.
- _____

6. The setting value is displayed on the screen.



3. Component Test

You can perform a simple good/bad evaluation and engine adjustment by operating the engine components with the YAMAHA Diagnostic System on a standalone basis to check the running sound and state.

3-1. Stationary Test

Perform the test when the engine is stopped.

Stationary Test items

Item
Activate ignition coil
Activate injector
Activate electric fuel pump
Activate stepping motor
Activate bypass valve motor
YPVS

Refer to “Functions by model” for detailed information.

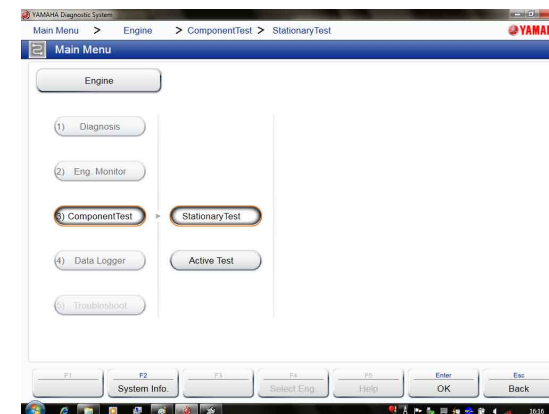
1. Display the Engine menu.
2. Click the [3) ComponentTest] button in the 2nd-level menu or press the [3], [Enter] or right arrow key on your keyboard.
3. The 3rd-level menu is displayed.
4. Click the [StationaryTest] in the 3rd-level menu or [OK] button, or press the [Enter] key on your keyboard.
5. The test item selection screen is displayed.

NOTICE

Avoid clicking the [Execute] and [Cancel] buttons repeatedly, otherwise the ECM or computer may not work properly and they may be damaged.

TIP:

- When the engine is running, an error message appears on screen, and no tests can be carried out.
- If an error has been detected during the test, an error message appears. Follow the instructions on screen.



■ Ignition coil activation test

⚠ WARNING

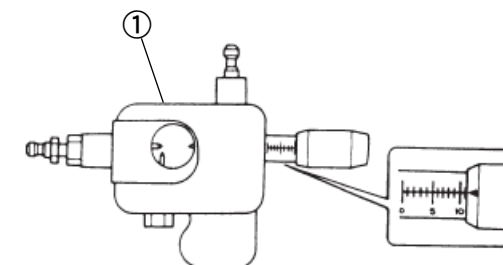
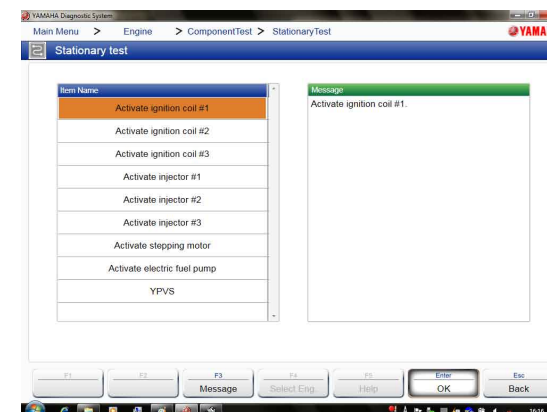
- Do not touch the ignition tester (spark checker) wiring during testing.
- Make sure to cover the spark plug cap so that there are no leaks.
- Keep flammable gas, fuel, and oil at a distance, as sparks may fly during testing.

Perform an ignition system test. Apply voltage to the ignition coil of the selected cylinder to generate a spark (5 times in 5 seconds) while the spark plug lead is connected to an ignition tester (spark checker).

1. Display the test item selection screen.
2. Select “Activate ignition coil” by either clicking it or pressing the up or down arrow keys on your keyboard.
3. Click the [OK] button or press the [Enter] key on your keyboard.
4. Connect the spark plug cap of the cylinder that will be tested to the ignition tester (spark checker).
5. Connect the ignition tester (spark checker) to ground.
6. Set the spark gap by turning the adjusting knob.

TIP:

A special service tool is needed.

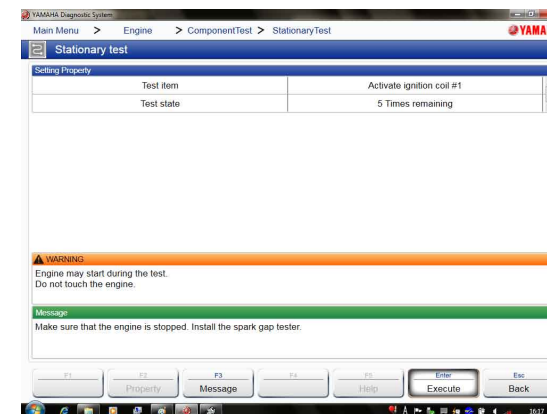


- ① North America: Spark checker (YM-34487)
Worldwide: Ignition tester (90890-06754)

7. The test screen is displayed.
8. Click the [Execute] button or press the [Enter] key on your keyboard.
9. Check the state of the ignition spark.

TIP: _____

- After starting the test, the button display switches from [Execute] to [Cancel].
 - Click the [Cancel] button or press the [Esc] key on your keyboard to stop the test.
 - To carry out the test again, click the [Execute] button or press the [Enter] key on your keyboard.
 - When testing a different cylinder or item, click the [Back] button or press the [Esc] key on your keyboard to return to the previous screen.
- _____



■ Injector activation test

⚠ WARNING

- Do not perform the test with the injector removed or with any fuel system parts removed. High-pressure fuel may spray out.
- When performing this operation, keep all sparks, flames, or other sources of ignition away from the testing area. Gasoline is highly flammable.

Perform a fuel system test. Activate the injector (20 times in 2 seconds) for a selected cylinder.

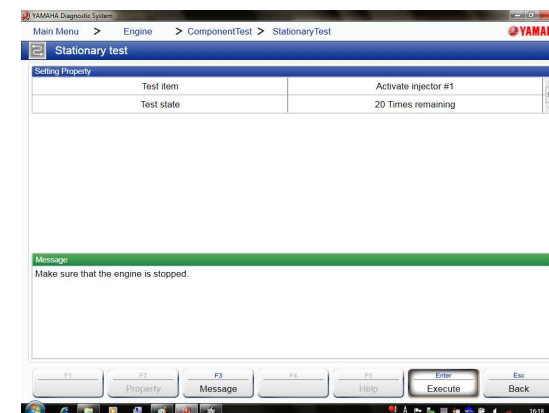
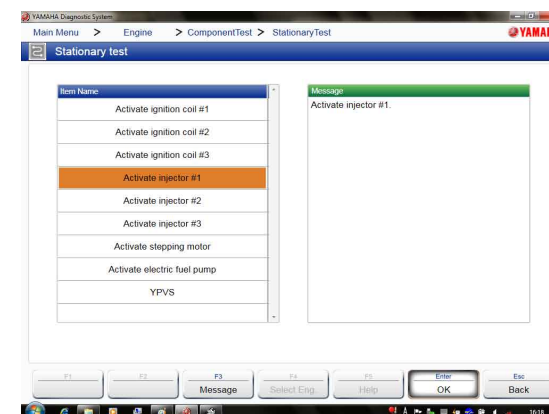
1. Display the test item selection screen.
2. Select “Activate injector” by either clicking it or pressing the up or down arrow keys on your keyboard.
3. Click the [OK] button or press the [Enter] key on your keyboard.
4. The test screen is displayed.
5. Click the [Execute] button or press the [Enter] key on your keyboard.
6. Listen to the operating sound of the injector.

NOTICE

Do not test the same cylinder more than 3 times consecutively, as it may damage the spark plug insulators.

TIP:

- Click the [Cancel] button or press the [Esc] key on your keyboard to stop the test.
- To carry out the test again, click the [Execute] button or press the [Enter] key on your keyboard.
- When testing a different cylinder or item, click the [Back] button or press the [Esc] key on your keyboard to return to the previous screen.



■ Electric fuel pump activation test

Apply voltage to the electric fuel pump and activate it to check the fuel system.

Activate the electric fuel pump for 10 seconds.

1. Display the test item selection screen.
2. Select “Activate Electric. fuel pump” by either clicking it or pressing the up or down arrow keys on your keyboard.
3. Click the [OK] button or press the [Enter] key on your keyboard.

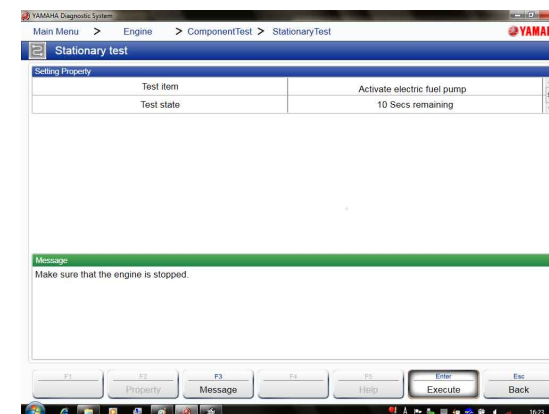
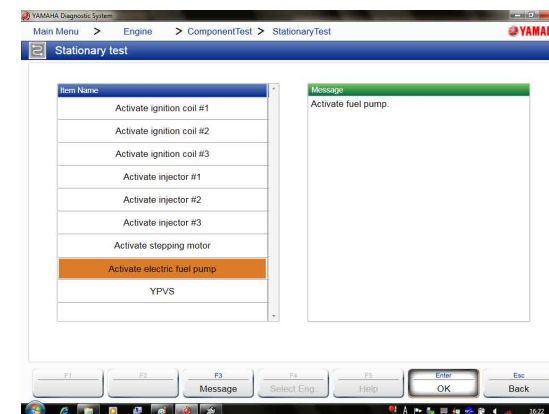
⚠ WARNING

- Do not perform the test with the injector removed or with any fuel system parts removed. High-pressure fuel may spurt out.
- When performing this operation, keep all sparks, flames, or other sources of ignition away from the testing area. Gasoline is highly flammable.

4. The test screen is displayed.
5. Click the [Execute] button or press the [Enter] key on your keyboard.
6. Listen to the operating sound of the Electric fuel pump.

TIP:

- Click the [Cancel] button or press the [Esc] key on your keyboard to stop the test.
- To carry out the test again, click the [Execute] button or press the [Enter] key on your keyboard.
- To perform a different test, click the [Back] button or press the [Esc] key on your keyboard to return to the previous screen.



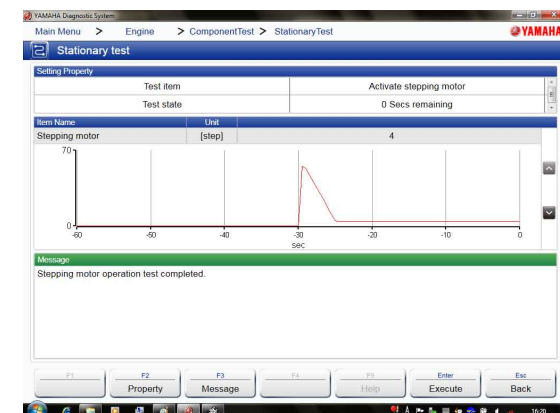
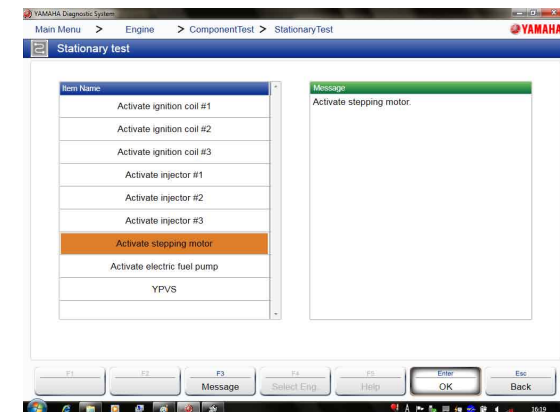
■ Stepping motor activation test

Apply voltage to the stepping motor and activate it for 7 seconds to test the stepping motor operation.

1. Display the test item selection screen.
2. Select “Activate stepping motor” by either clicking it or pressing the up or down arrow keys on your keyboard.
3. Click the [OK] button or press the [Enter] key on your keyboard.
4. The test screen is displayed.
5. Click the [Execute] button or press the [Enter] key on your keyboard.
6. Check that the stepping motor operates properly on the graph.

TIP:

- Click the [Cancel] button or press the [Esc] key on your keyboard to stop the test.
- To carry out the test again, click the [Execute] button or press the [Enter] key on your keyboard.
- To perform a different test, click the [Back] button or press the [Esc] key on your keyboard to return to the previous screen.



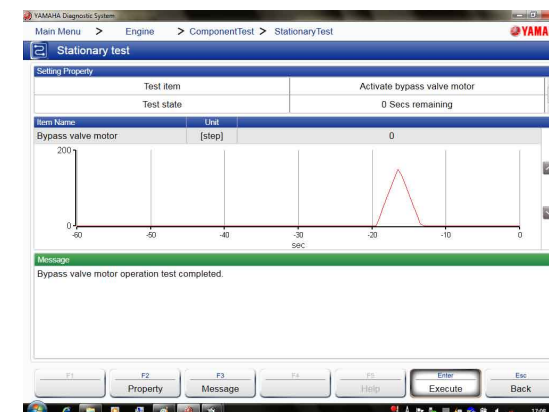
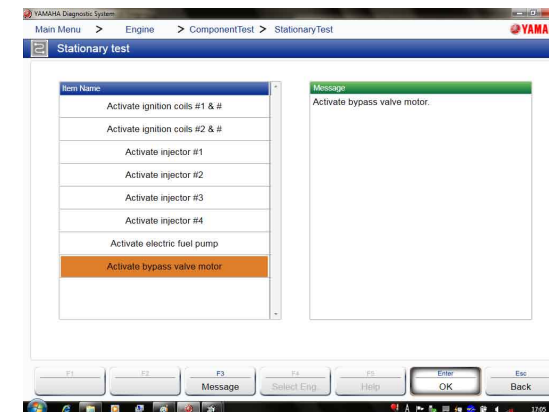
■ Bypass valve motor activation test

Apply voltage to the bypass valve motor and activate it for 7 seconds to test the bypass valve motor operation.

1. Display the test item selection screen.
2. Select “Activate bypass valve motor” by either clicking it or pressing the up or down arrow keys on your keyboard.
3. Click the [OK] button or press the [Enter] key on your keyboard.
4. The test screen is displayed.
5. Click the [Execute] button or press the [Enter] key on your keyboard.
6. Check that the bypass valve motor operates properly on the graph.

TIP:

- Click the [Cancel] button or press the [Esc] key on your keyboard to stop the test.
- To carry out the test again, click the [Execute] button or press the [Enter] key on your keyboard.
- To perform a different test, click the [Back] button or press the [Esc] key on your keyboard to return to the previous screen.



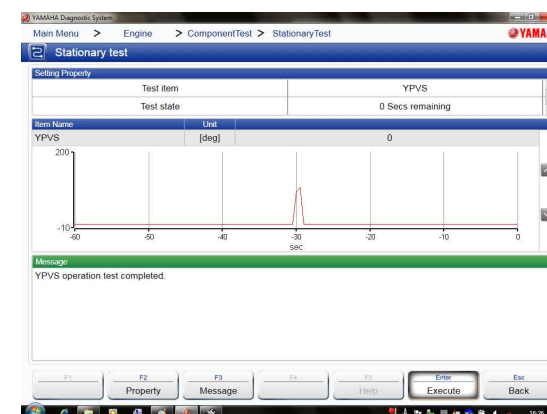
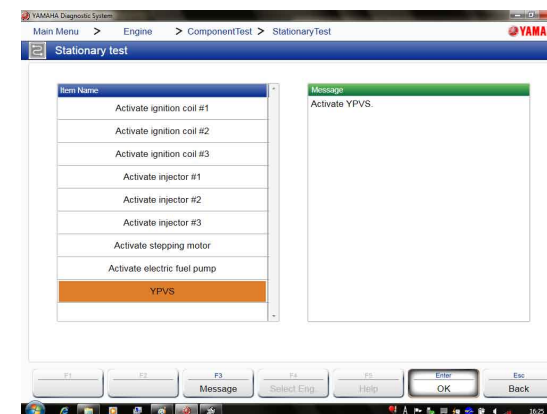
■ YPVS activation test

Apply voltage to the YPVS servomotor and activate it for 2 seconds to test the YPVS operation.

1. Display the test item selection screen.
2. Select “YPVS” by either clicking it or pressing the up or down arrow keys on your keyboard.
3. Click the [OK] button or press the [Enter] key on your keyboard.
4. The test screen is displayed.
5. Click the [Execute] button or press the [Enter] key on your keyboard.
6. Check that the YPVS operates properly on the graph.

TIP:

- Click the [Cancel] button or press the [Esc] key on your keyboard to stop the test.
- To carry out the test again, click the [Execute] button or press the [Enter] key on your keyboard.
- To perform a different test, click the [Back] button or press the [Esc] key on your keyboard to return to the previous window.



3-2. Active Test

⚠ WARNING

Make sure to moor the watercraft before performing the test.

Perform the test with the engine running and the throttle lever fully closed.
It is not possible to carry out the test while the watercraft is moving.

Active Test items

Item
Drop cylinder

Refer to “Functions by model” for detailed information.

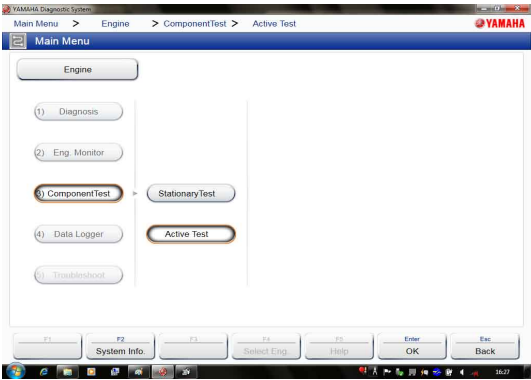
- 1. Display the Engine menu.
- 2. Click the [3) ComponentTest] button in the 2nd-level menu or press the [3], [Enter] or right arrow key on your keyboard.
- 3. The 3rd-level menu is displayed.
- 4. Click the [Active Test] in the 3rd-level menu or [OK] button, or press the [Enter] key on your keyboard.
- 5. The test item selection screen is displayed.

NOTICE

Avoid clicking the [Execute] and [Cancel] buttons repeatedly, otherwise the ECM or computer may not work properly and they may be damaged.

TIP:

If an error has been detected during the test, an error message appears. Follow the instructions on screen.



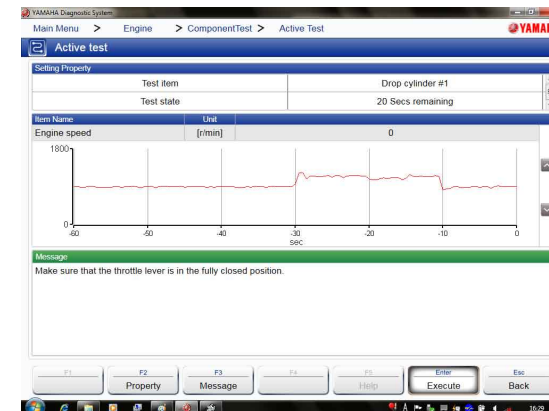
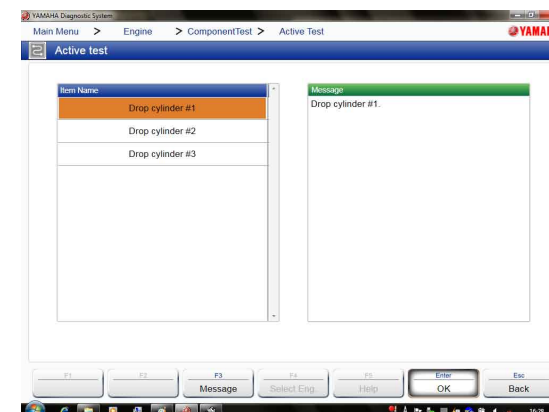
■ Cylinder drop test

Perform cylinder drop test to observe the affect on engine speed as a selected cylinder is deactivated for 5 seconds during a 20 second cycle. Note that the ISC valve is placed in a fixed position during this test to allow easier viewing of rpm change as each cylinder is deactivated.

1. Display the test item selection screen.
2. Select “Drop cylinder” by either clicking it or pressing the up or down arrow keys on your keyboard.
3. Click the [OK] button or press the [Enter] key on your keyboard.
4. The test screen is displayed.
5. Start the engine.
6. Click the [Execute] button or press the [Enter] key on your keyboard.
7. Check variations in engine speed, vibration, and noise.

TIP:

- Click the [Cancel] button or press the [Esc] key on your keyboard to stop the test.
- To carry out the test again, click the [Execute] button or press the [Enter] key on your keyboard.
- To perform a different test or perform the test on a different cylinder, click the [Back] button or press the [Esc] key on your keyboard to return to the previous screen.



4. Data Logger

You can display and compare engine data recorded in the ECM on a graph, and record the engine running state in an adapter.

4-1. Logger graph

Displays data for the past 78 seconds stored in the ECM on a graph.

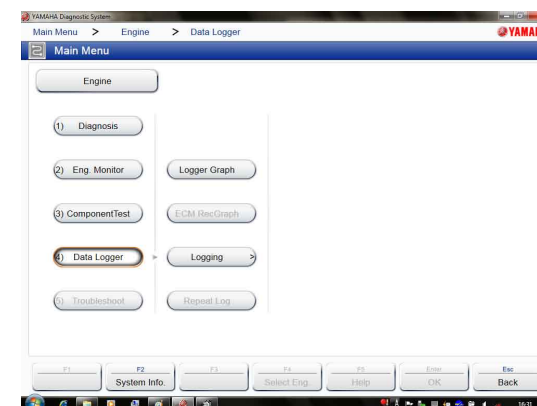
Three graph items can be displayed at one time.

Data graph display items

Item
Engine speed
Battery voltage
TPS
Engine temperature
EX.manifold water temp sensor
Intake air pressure
Oil pressure
Stepping motor

Refer to “Functions by model” for detailed information.

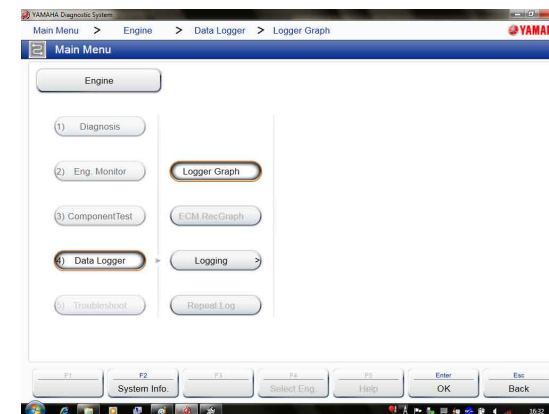
1. Display the Engine menu.
2. Click the [4] Data Logger] button in the 2nd-level menu or press the [4], [Enter] or right arrow key on your keyboard.
3. The 3rd-level menu is displayed.



4. Display the 3rd-level menu.
5. Click the [Logger Graph] in the 3rd-level menu or [OK] button, or press the [Enter] key on your keyboard.

TIP: _____

- Even while the engine is running, the graph display does not show the current engine state. The graph shows the figures from the moment when the [Logger Graph] or the [OK] button was clicked, or the [Enter] key was pressed.
- Some items may not be available depending on the model of the watercraft.



6. The **Logger graph** is displayed.

TIP: _____

- To view other items, click the [▲] or [▼] buttons, or press the up or down arrow keys on your keyboard or the [⬆] or [⬇] buttons to move through the screens one at a time.
- Click the [◀] or [▶] buttons or press the right or left arrow keys on your keyboard to move the guidelines (the red lines) position one gradient in the relevant direction. The figures for the position that matches the guidelines (the red lines) appear at the top right of the table.



4-2. ECM Record graph

When a problem occurs in the electronic throttle system, you can display data for 2 seconds before and after the problem recorded on the ECM, for a total of 4 seconds.

You can select the display type from 3 types of fixed patterns stored in the database. You can also select all display patterns.

ECM record graph display items

Item	Item	Item
Engine speed	Ref. TPS voltage(*3)	Engine shut-off switch
APS 1	Ref. APS voltage(*4)	Main relay
APS 2	Engine stop mode	ETV relay
Steering sensor	Engine start mode	Thermoswitch
TPS 1	SW-activated engine stop mode	Oil pressure switch
TPS 2	OTS mode	WARNING
Intake air pressure	Cruise assist mode	ETV limit
Battery voltage	Reverse mode	Engine operating hours
Target TPS voltage(*1)	No-Wake mode	Trigger
Target TPS voltage for ISC(*2)	Low-RPM mode	Code

Refer to “Functions by model” for detailed information.

(*1) “Target TPS voltage” stands for “Target Throttle Position Sensor voltage.” This item shows the target output voltage of TPS. This value means that ECM should control to open throttle valve to get the goal open degree.

(*2) “Target TPS voltage for ISC” stands for “Target Throttle Position Sensor voltage for Idle Speed Control.” ECM controls the engine idle speed by using throttle valve attached TPS. This target voltage is used by ECM to achieve the goal open degree of the throttle valve at idle speed.

(*3) “Ref. TPS voltage” stands for “Reference Throttle Position Sensor voltage.” This item shows the criterion output voltage of TPS. This value is used to detect the TPS output voltage during engine operation.

(*4) “Ref. acc. pos. sensor voltage” stands for “Reference accelerator position sensor voltage.”

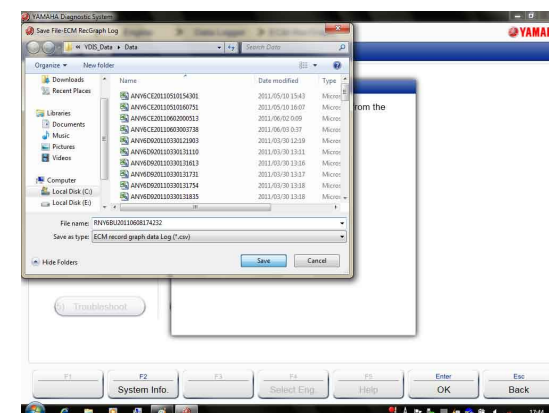
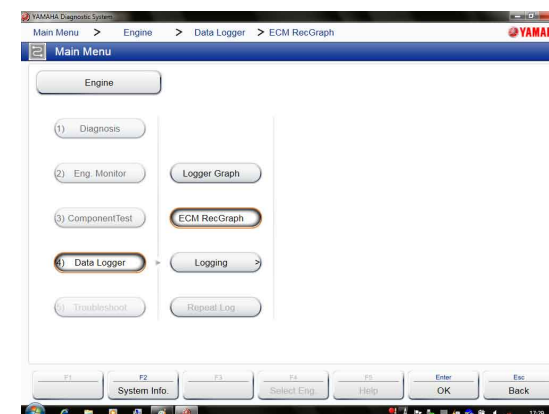
This item shows the criterion output voltage of Accelerator position sensor. This value is used to detect the Accelerator position sensor output voltage when the remote control throttle lever opens.

1. Display the 3rd-level menu.
2. Click the [ECM RecGraph] or [OK] button, or press the [Enter] key on your keyboard.

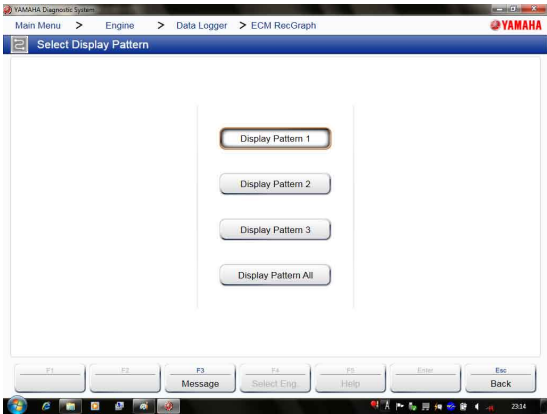
TIP: _____

- When a problem occurs, an error message appears. Follow the instructions on screen.
- Some items may not be available depending on the model of the watercraft.
- When there is no data stored in the ECM, or when the stored data is corrupted, an error message appears.

3. The **File Save** window appears.
4. Click the [Save] button to save data.



- 5. The **Select Display Pattern** screen is displayed.
- 6. Select the [Display Pattern] button by either clicking it or pressing the up or down arrow keys on your keyboard, and then press the [Enter] key.



Items using Display pattern 1

Item
Engine speed
APS 1
TPS 2
Target TPS voltage

Items using Display pattern 2

Item
APS 1
APS 2
TPS 1
TSP 2

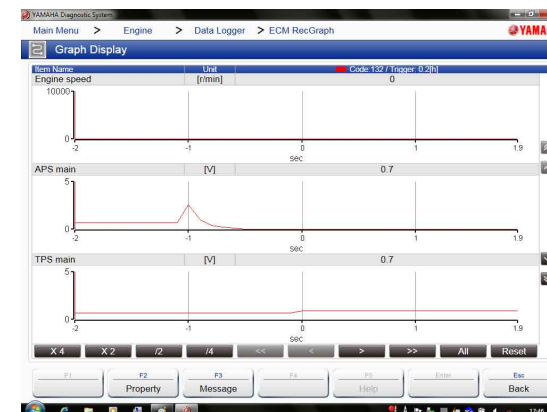
Items using Display pattern 3

Item
Engine speed
Steering sensor
Target TPS voltage
Target TPS voltage for ISC

7. The graph screen is displayed.

TIP:

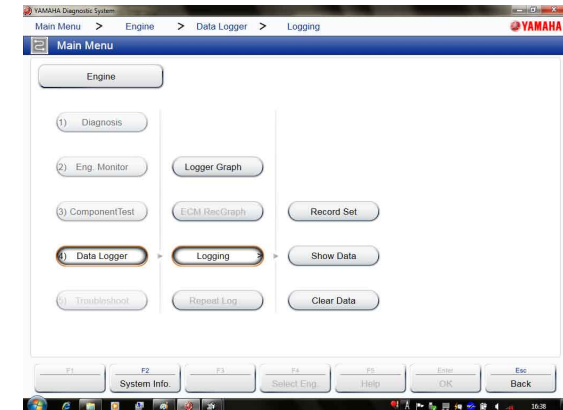
- You can change the display values and display colors. See “[Setting the graph properties.](#)”
- Click the [x 2] or [x 4] buttons or press the [2] or [4] key on your keyboard to double the X axis (time).
- Click the [/2] or [/4] buttons or press the [Shift]+[2] or [4] keys to cut the scale of the X axis by half.
- Click the [<] or [>] buttons or press the right or left arrow keys to move the guidelines (the red lines) position one gradient in the relevant direction. The figures for the position that matches the guidelines (the red lines) appear at the top right of the table.
- Click the [<<] or [>>] button, or press [Shift] + the left or right arrow keys to move the position of the end guidelines (the red lines) in the relevant direction.
- Click the [All] button or press the space bar to display all saved data on screen.
- Click the [Reset] button to reset the saved data to the default values.



4-3. Logging

Connect a computer and set the items to record to carry out data logging using the adapter.

- 1.** Display the 3rd-level menu.
- 2.** Click the [Logging] button in the 3rd-level menu or press the [Enter] or right arrow key on your keyboard.
- 3.** The 4th-level menu is displayed.



■ Clearing data from the adapter

To record data on the adapter, you must delete all current data stored on the adapter.

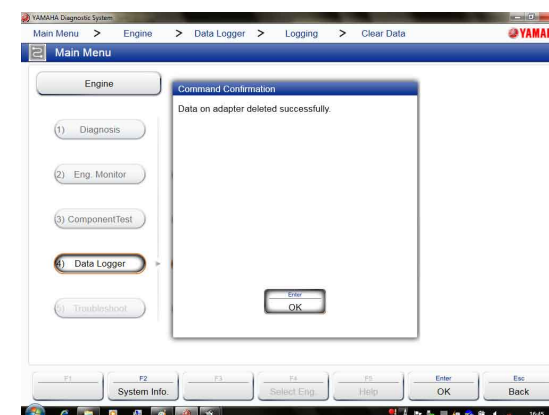
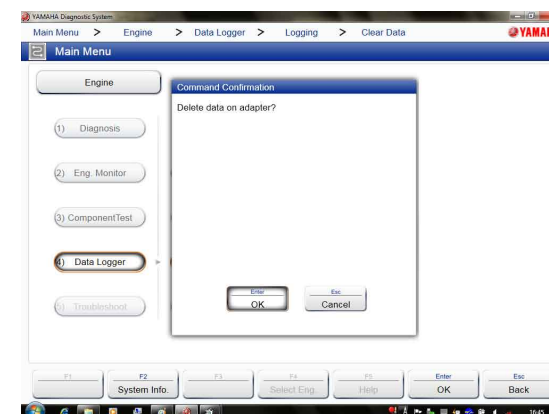
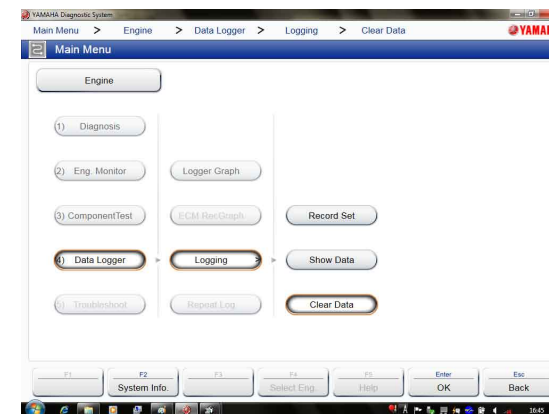
1. Display the 4th-level menu.
2. Select the [Clear Data] button by either clicking it or pressing the up or down arrow keys on your keyboard, and then press the [Enter] key.

3. A confirmation message appears.

4. Click the [OK] button or press the [Enter] key on your keyboard.

5. A completion message appears.

6. Click the [OK] button or press the [Enter] key on your keyboard.



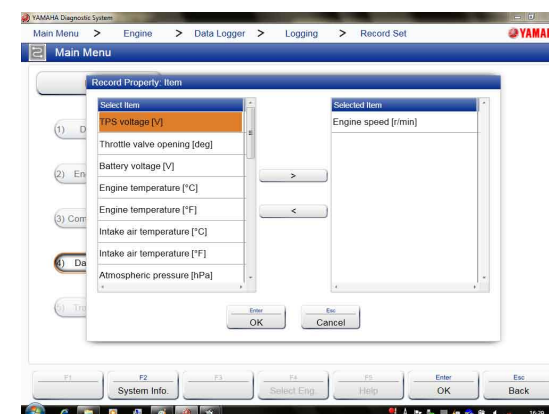
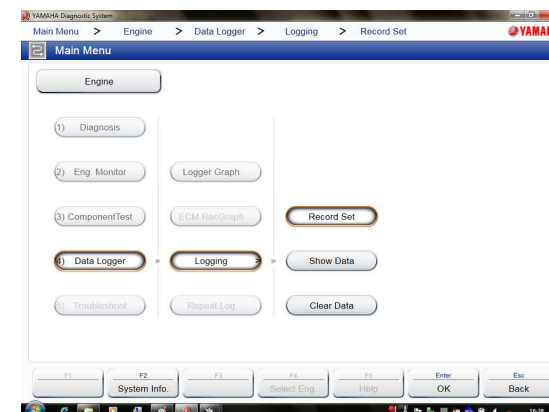
■ Record Setting

After configuring recording properties (number of items, number of engines, recordable time, sampling interval, comments), record the data on the adapter.

1. Display the 4th-level menu.
2. Click the [Record Set] button or press the [Enter] key on your keyboard.
3. The **Record Property: Item** window is displayed.
4. Select the item that you wish to record by either clicking it or pressing the up and down arrow keys on your keyboard.

TIP:

By default, only “Engine speed [r/min]” is displayed in the Selected Item column.



5. Click the [>] button or press the space bar on your keyboard to move the item to the Selected Item column.

6. Click the [OK] button or press the [Enter] key on your keyboard.

TIP: _____

Click the [<] button or press the space bar on your keyboard to change the selected status back to unselected.

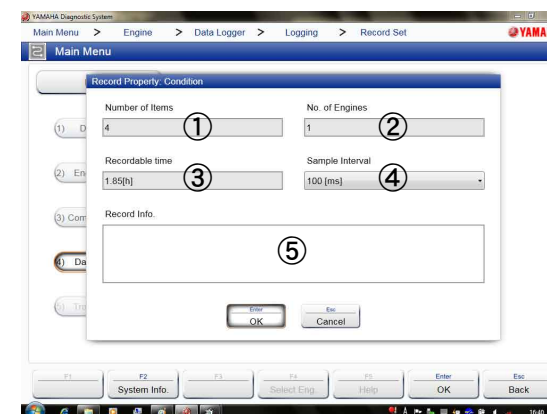
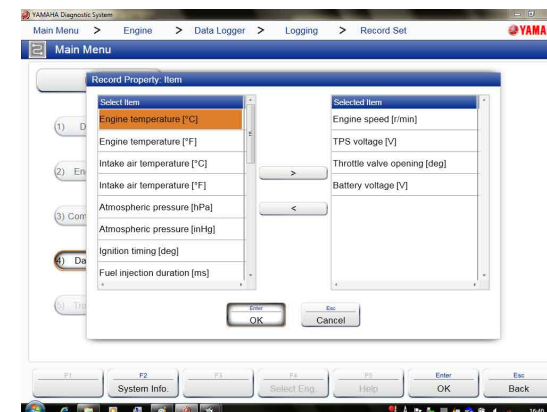
7. The **Record Property: Condition** window is displayed.

8. Select a sampling interval to record data.

9. Click the [OK] button or press the [Enter] key on your keyboard.

TIP: _____

- “1” will be displayed in the field of “No. of Engines.”
- The sampling interval you can select varies according to the number of items you are monitoring: fastest can be selected when only 1 item is monitored, and 100 ms can be selected when 2 to 8 items are monitored.
- To confirm all actions, set the sampling interval to a long time, and to confirm details, set this to a short time.
- Recordable time differs depending on set conditions.

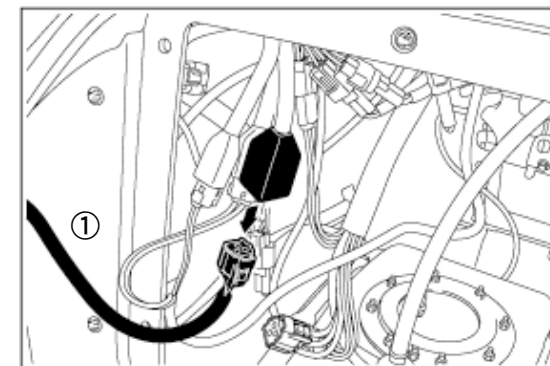
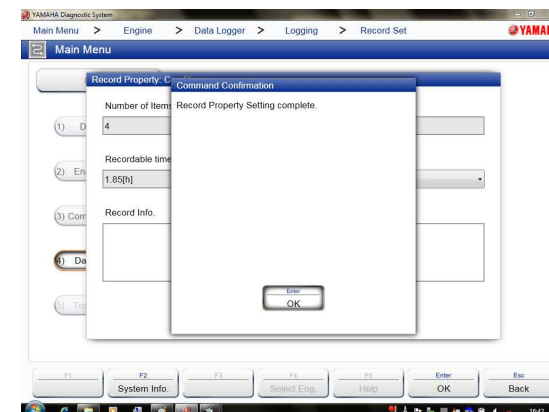


- ① Number of Items
- ② Number of Engines
- ③ Recordable time
- ④ Sampling Interval
- ⑤ Comment

- 10.** A completion message appears.
- 11.** Click the [OK] button or press the [Enter] key on your keyboard.
- 12.** Start the engine and disconnect the USB cable between the adapter and computer to set the system in ready-to-record state.
- 13.** Check that a red light is blinking.
- 14.** The system stops logging at a predetermined time, or when the USB cable is connected to the adapter again.

TIP:

- If removing the USB cable, then replace the adapter cap to prevent water from entering.
- Removing the USB cable means the adapter will enter recording status, and connecting the USB cable will end this status.
- If the engine speed is 500 r/min or less, then 5 samples will be recorded then recording stopped. However, because this is still in recording status, if the engine speed increases to 500 or more, recording will start again.
- During operation, the adapter is supplied power from the engine. If the engine is stopped while the adapter is recording, then the rechargeable battery within will perform a backup. (Guaranteed for 48 hours with the battery charged for an hour)
- If the internal battery becomes depleted, recorded data will be deleted. Accordingly, before this happens save the data or connect the adapter to the engine with the engine ON and recharge the battery.
- If recording status is ended, then as long as the data within the adapter is not deleted, the adapter may not record new data.
- If you leave the engine off for more than 1 hour after stopping it with the adapter connected, make sure to disconnect the adapter from the watercraft to prevent the watercraft battery from being depleted. Connect the adapter to restart logging.



① K-Line harness

■ Displaying data in a graph

You can read data from the adapter and display it on the computer screen.

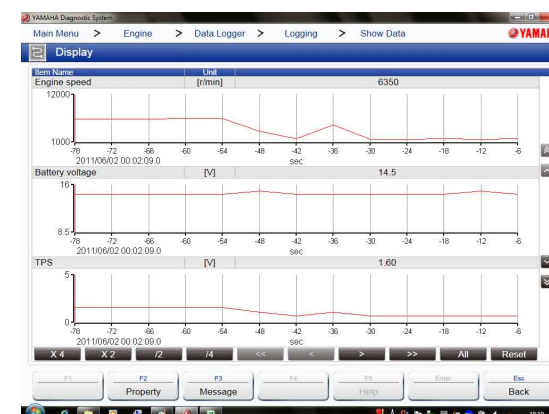
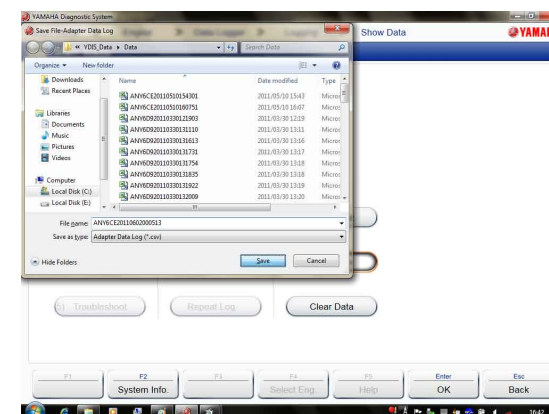
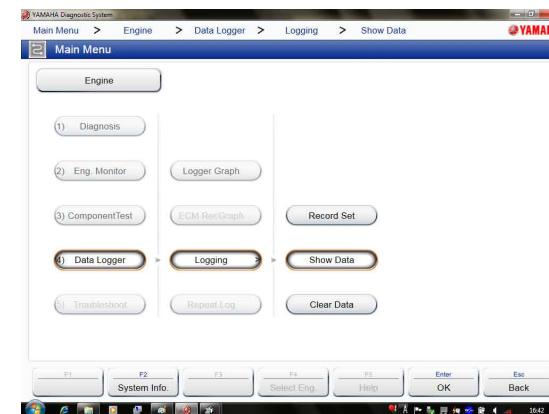
1. Display the 4th-level menu.
2. Select the [Show Data] button by either clicking it or pressing the up or down arrow keys on your keyboard, and then press the [Enter] key.

3. The **Save File** window is displayed.

4. Data name recorded on the adapter is displayed as a file name.

5. Click the [Save] button or press the [Enter] key on your keyboard.

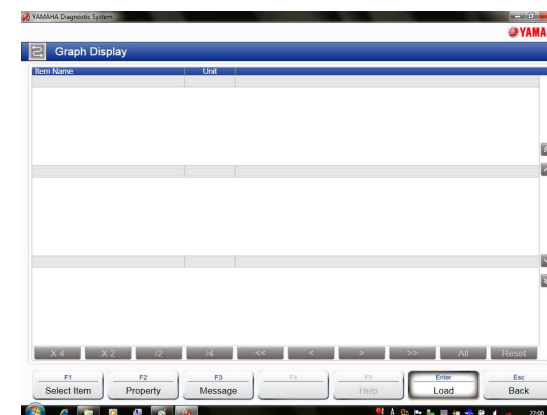
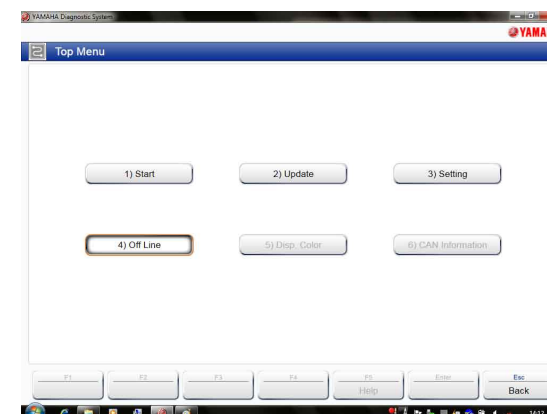
6. Data is displayed in a graph.



Off-line

You can view graph data of Engine Monitor, ECM Record graph, and Logging previously saved on the computer even when not connected to the ECM.

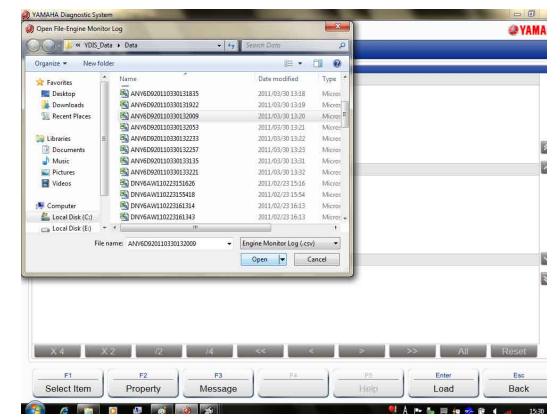
1. Display the **Top Menu** screen.
2. Click the [4) Off Line] button or press [4] or [Enter] key on your keyboard.
3. The **Graph Display** screen appears.
4. Click the [Load] button or press the [Enter] key on your keyboard.



5. The **Open File** window appears.
6. Select the file that contains the graph data.
7. Click the [Open] button or press the [Enter] key on your keyboard.

TIP:

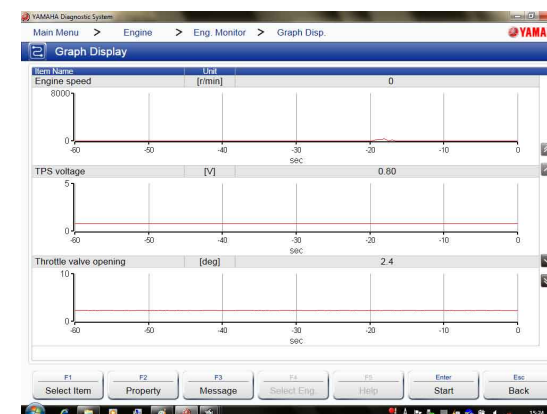
- Data with file names starting with ANY, LNY, or RNY prefix can be displayed on the screen.
- If you select data that cannot be displayed during off-line operation, an error message appears. Follow the instructions on screen.
- Click the [Cancel] button or press the [Esc] key on your keyboard to cancel the file selection.



- 8.** The selected graph data is displayed.

TIP:

You can change the graph display settings.



Appendix

1. Setting the desktop area

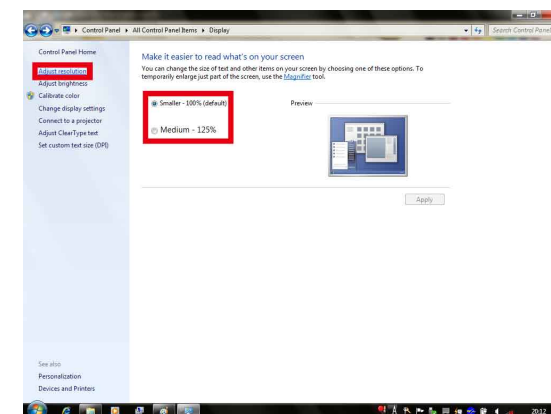
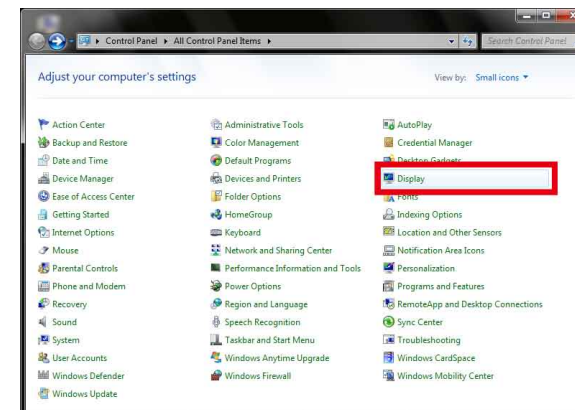
NOTICE

Do not change the screen size when using this program.

1. Click the [Start] button on the Windows taskbar, select settings, and open the control panel.
2. Double-click the Display in the center of the control panel.
3. The Display setting window is displayed.
4. Click “Adjust resolution.”

TIP:

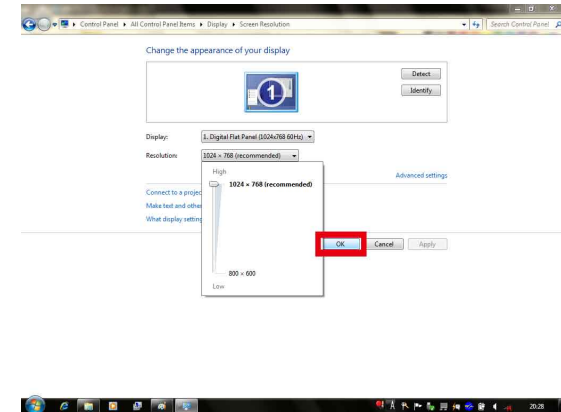
The screen resolution can also be adjusted by selecting Smaller or Medium in the window.



5. A window to adjust screen resolution appears.
6. Move the slider bar to adjust the resolution.
7. Click the [OK] button to set the desktop area.

TIP: _____

Click the [NO] button to cancel the desktop area setting.



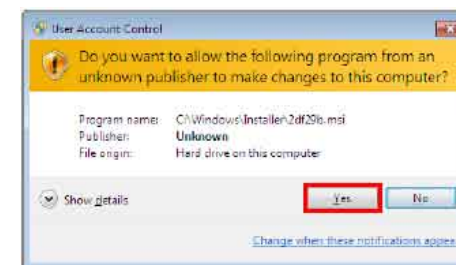
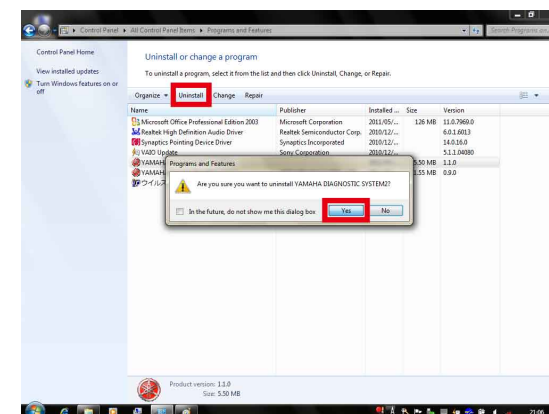
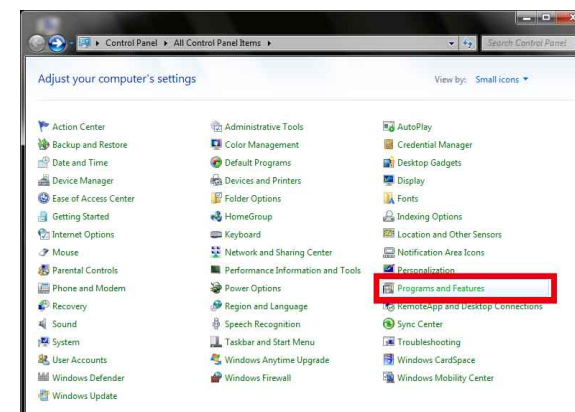
2. Uninstalling the YAMAHA Diagnostic System

Use the following procedure to uninstall the YAMAHA Diagnostic System.

1. Close all programs before starting the uninstaller.
2. Click the [Start] button on the Windows taskbar, select settings, and open the control panel.
3. Click the Programs and Features in the control panel.
4. Select “YAMAHA DIAGNOSTIC SYSTEM 2” and click “Uninstall.”
5. Click [Yes] button to uninstall the YAMAHA Diagnostic System.

TIP:

- Click the [No] button to cancel the uninstall.
- If you are using Windows Vista or Windows 7 and the **User Account Control** dialog box appears, click [Yes] to continue.



3. Troubleshooting

Error content	Cause	Action
Communication cable related error occurs.	Power is not supplied to the ECM.	Push the engine start switch to start or crank the engine.
	Communication cable is disconnected.	Connect communication cable between the computer's communication port and the communication coupler of the watercraft.
	Battery is disconnected from the watercraft.	Connect battery to the watercraft.
	The battery voltage is below 12 V.	Connect battery of 12 V or higher.
	The USB driver has not been installed.	Install the USB driver.
Application does not start.	The hardware does not meet the requirements to operate this application.	Use a computer that meets the specified hardware requirements.
	YdisUI.exe is not installed in application directory.	If YdisUI.exe is not found in the application directory, install the application again.
	Other application (Service tool) is already in operation.	Quit the application in operation, since two applications (Service tool) cannot be operated simultaneously.
Application related error occurs.	Error message "Program file or Database file is not installed properly. Please install again." is displayed.	Install program file or database file again.
Database related error occurs.	Error message "Database files are not installed properly." is displayed.	Update database again.
	Error message "System file not found #####.###." is displayed.	The database is not applicable to communication with ECM. Update database to correspond to ECM.
Incorrect fonts on screen	The computer language does not correspond to the application.	Use a computer that operates the required operating system.
Stationary or active tests cannot be ended even by clicking [Cancel].	[Execute] and [Cancel] buttons have been clicked more than necessary, and the ECM or computer does not operate properly.	"Turn off your computer. Push the engine stop switch and reset the ECM."

Functions by model (Watercraft)

Diagnosis

		A	B	C	D	E	F	G	H	I
	Engine code WaveRunner	60E	60E 6B6	60T	6D3 6BU		6S5 6AN 6BH 6CN	6AA (WITH CATALYTIC CONVERTER)	6CS 6CR	
	Model name WaveRunner	FX1000 (F1B: '02MY)	FX1000(A) (F1B: '03-'05MY) FX1000(A) (F1Y: '06-'08MY) FX1100(A) (F1S: '04-'05MY) FX1100(A) (F1X: '06-'08MY)	GP1300 (F1G: '03-'08MY)	VX1100(A, B, C) (F1K: '05-'08MY) VX1100(A, B, C) (F2L: '09MY) VX1100(A, B, C) (F2N: '10-'12MY)		FX1800(A) (F1W: '08-'11MY) GX1800 (F2R: '09-'12MY) GX1800A (F2C: '09-'12MY) FY1800(A) (F2H: '09-'11MY) VX1800(A) (F2M: '11-'12MY)	FX1100(A) (F1X: '07-'08MY)	FA1800(A) (F2S: '12MY) FB1800(A) (F2T: '12MY)	
	Engine code		6B5 6P6			6S8		6AB (WITH CATALYTIC CONVERTER)		6AP 6CW
	Model name Sport Boat		SRT1000(A, B) (F1C: '03-'06MY) SXT1100(A, B, C, D, E, F, G, H) (F2A: '07-'09MY) FAT1100(A, B) (F2G: '08-'11MY)			FRT1100(A, B, C) (F1T: '06-'11MY) LAT1100(A, B) (F2K: '12MY)		SXT1100(A, B, C, D, E, F, G, H) (F2A: '08-'09MY) FAT1100(A, B) (F2G: '08-'10MY)		SXT1800(A, B, C, D, E, F, G, H, J) (F2D: '10-'12MY) XAT1800(A, B, C) (F2J: '12MY) RX1800(A, B, C, D) (F3A: '12MY)
Item	Diagnosis code									
Pulser coil	13	○	○	○	○	○	○	○	○	○
Thermo sensor	15	○	○	○	○	○	○	○	○	○
Knock sensor	17						○		○	
TPS	18	○	○	○				○		
Battery voltage	19	○	○	○	○	○	○	○	○	○
Atmospheric pressure sensor	22			○						
Air temperature sensor	23	○	○	○	○	○	○	○	○	○
Cam position sensor	24	○	○		○	○	○	○	○	○
Air pressure sensor	29	○	○		○	○	○	○	○	○
Slant detection switch	47	○	○	○	○		○	○	○	○
APS full close switch	51								○	
EX. manifold temp. sensor	53			○				○		
Bypass valve motor/Stepping motor	54		○	○				○		
Steering switch	55		○	○	○		○	○	○	○
Intake system	63		○					○		
YPVS	64			○						
EX. manifold water temp sensor	65			○			○	○	○	○
Stepping motor operation 1	66			○						
Stepping motor operation 2	67			○						
No-wake mode switch	68		○			○	○	○	○	
No-wake/Cruise assist up SW	75									○

		A	B	C	D	E	F	G	H	I
	Engine code WaveRunner	60E	60E 6B6	60T	6D3 6BU		6S5 6AN 6BH 6CN	6AA (WITH CATALYTIC CONVERTER)	6CS 6CR	
	Model name WaveRunner	FX1000 (F1B: '02MY)	FX1000(A) (F1B: '03-'05MY) FX1000(A) (F1Y: '06-'08MY) FX1100(A) (F1S: '04-'05MY) FX1100(A) (F1X: '06-'08MY)	GP1300 (F1G: '03-'08MY)	VX1100(A, B, C) (F1K: '05-'08MY) VX1100(A, B, C) (F2L: '09MY) VX1100(A, B, C) (F2N: '10-'12MY)		FX1800(A) (F1W: '08-'11MY) GX1800 (F2R: '09-'12MY) GX1800A (F2C: '09-'12MY) FY1800(A) (F2H: '09-'11MY) VX1800(A) (F2M: '11-'12MY)	FX1100(A) (F1X: '07-'08MY)	FA1800(A) (F2S: '12MY) FB1800(A) (F2T: '12MY)	
	Engine code		6B5 6P6			6S8		6AB (WITH CATALYTIC CONVERTER)		6AP 6CW
	Model name Sport Boat		SRT1000(A, B) (F1C: '03-'06MY) SXT1100(A, B, C, D, E, F, G, H) (F2A: '07-'09MY) FAT1100(A, B) (F2G: '08-'11MY)			FRT1100(A, B, C) (F1T: '06-'11MY) LAT1100(A, B) (F2K: '12MY)		SXT1100(A, B, C, D, E, F, G, H) (F2A: '08-'09MY) FAT1100(A, B) (F2G: '08-'10MY)		SXT1800(A, B, C, D, E, F, G, H, J) (F2D: '10-'12MY) XAT1800(A, B, C) (F2J: '12MY) RX1800(A, B, C, D) (F3A: '12MY)
Item	Diagnosis code									
No-wake/Cruise assist down SW	76									○
Reverse switch	78						○		○	
TPS (ETV)	124				○	○	○		○	○
TPS (ETV)	125				○	○	○		○	○
TPS (ETV)	126				○	○	○		○	○
TPS (ETV)	127				○	○	○		○	○
TPS (ETV)	128				○	○	○		○	○
APS (ETV)	131				○	○	○		○	○
APS (ETV)	132				○	○	○		○	○
APS (ETV)	133				○	○	○		○	○
APS (ETV)	134				○	○	○		○	○
APS (ETV)	135				○	○	○		○	○
ETV	112				○	○	○		○	○
ETV	113				○	○	○		○	○
ETV	114				○	○	○		○	○
ETV	115				○	○	○		○	○
ETV	116				○	○	○		○	○
ETV	117				○	○	○		○	○
ETV	118				○	○	○		○	○
ETV	119				○	○	○		○	○
ETV	121				○	○	○		○	○
ETV	122				○	○	○		○	○
ETV	123				○	○	○		○	○
ETV	129				○	○	○		○	○
ETV	136				○	○	○		○	○

		A	B	C	D	E	F	G	H	I
	Engine code WaveRunner	60E	60E 6B6	60T	6D3 6BU		6S5 6AN 6BH 6CN	6AA (WITH CATALYTIC CONVERTER)	6CS 6CR	
	Model name WaveRunner	FX1000 (F1B: '02MY)	FX1000(A) (F1B: '03-'05MY) FX1000(A) (F1Y: '06-'08MY) FX1100(A) (F1S: '04-'05MY) FX1100(A) (F1X: '06-'08MY)	GP1300 (F1G: '03-'08MY)	VX1100(A, B, C) (F1K: '05-'08MY) VX1100(A, B, C) (F2L: '09MY) VX1100(A, B, C) (F2N: '10-'12MY)		FX1800(A) (F1W: '08-'11MY) GX1800 (F2R: '09-'12MY) GX1800A (F2C: '09-'12MY) FY1800(A) (F2H: '09-'11MY) VX1800(A) (F2M: '11-'12MY)	FX1100(A) (F1X: '07-'08MY)	FA1800(A) (F2S: '12MY) FB1800(A) (F2T: '12MY)	
	Engine code		6B5 6P6			6S8		6AB (WITH CATALYTIC CONVERTER)		6AP 6CW
	Model name Sport Boat		SRT1000(A, B) (F1C: '03-'06MY) SXT1100(A, B, C, D, E, F, G, H) (F2A: '07-'09MY) FAT1100(A, B) (F2G: '08-'11MY)			FRT1100(A, B, C) (F1T: '06-'11MY) LAT1100(A, B) (F2K: '12MY)		SXT1100(A, B, C, D, E, F, G, H) (F2A: '08-'09MY) FAT1100(A, B) (F2G: '08-'10MY)		SXT1800(A, B, C, D, E, F, G, H, J) (F2D: '10-'12MY) XAT1800(A, B, C) (F2J: '12MY) RX1800(A, B, C, D) (F3A: '12MY)
Item	Diagnosis code									
ETV	137				○	○	○		○	○
ETV	138				○	○	○		○	○
ETV	139				○	○	○		○	○
ETV	141				○	○	○		○	○
ETV	142				○	○	○		○	○
ETV	143				○	○	○		○	○
ETV	144				○	○	○		○	○
ETV	145				○	○	○		○	○

Diagnosis Record

		A	B	C	D	E	F	G	H	I
	Engine code WaveRunner	60E	60E 6B6	60T	6D3 6BU		6S5 6AN 6BH 6CN	6AA (WITH CATALYTIC CONVERTER)	6CS 6CR	
	Model name WaveRunner	FX1000 (F1B: '02MY)	FX1000(A) (F1B: '03-'05MY) FX1000(A) (F1Y: '06-'08MY) FX1100(A) (F1S: '04-'05MY) FX1100(A) (F1X: '06-'08MY)	GP1300 (F1G: '03-'08MY)	VX1100(A, B, C) (F1K: '05-'08MY) VX1100(A, B, C) (F2L: '09MY) VX1100(A, B, C) (F2N: '10-'12MY)		FX1800(A) (F1W: '08-'11MY) GX1800 (F2R: '09-'12MY) GX1800A (F2C: '09-'12MY) FY1800(A) (F2H: '09-'11MY) VX1800(A) (F2M: '11-'12MY)	FX1100(A) (F1X: '07-'08MY)	FA1800(A) (F2S: '12MY) FB1800(A) (F2T: '12MY)	
	Engine code		6B5 6P6			6S8		6AB (WITH CATALYTIC CONVERTER)		6AP 6CW
	Model name Sport Boat		SRT1000(A, B) (F1C: '03-'06MY) SXT1100(A, B, C, D, E, F, G, H) (F2A: '07-'09MY) FAT1100(A, B) (F2G: '08-'11MY)			FRT1100(A, B, C) (F1T: '06-'11MY) LAT1100(A, B) (F2K: '12MY)		SXT1100(A, B, C, D, E, F, G, H) (F2A: '08-'09MY) FAT1100(A, B) (F2G: '08-'10MY)		SXT1800(A, B, C, D, E, F, G, H, J) (F2D: '10-'12MY) XAT1800(A, B, C) (F2J: '12MY) RX1800(A, B, C, D) (F3A: '12MY)
Item	Diagnosis code									
Pulser coil	13	○	○	○	○	○	○	○	○	○
Thermo sensor	15	○	○	○	○	○	○	○	○	○
Knock sensor	17						○			○
TPS	18	○	○	○				○		
Battery voltage	19	○	○	○	○	○	○	○	○	○
Air temperature sensor	23	○	○	○	○	○	○	○	○	○
Cam position sensor	24	○			○	○	○	○	○	○
Air pressure sensor	29	○	○		○	○	○	○	○	○
Slant detection switch	47	○	○	○	○		○	○	○	
APS full close switch	51								○	
EX. manifold temp. sensor	53			○				○		
Bypass valve motor/Stepping motor	54		○	○				○		
Steering switch	55		○	○	○		○	○	○	
Memory data	59	○	○		○	○				
Intake system	63						○	○	○	○
YPVS	64			○						
EX. manifold water temp sensor	65			○			○	○	○	○
Stepping motor operation 1	66			○						
Stepping motor operation 2	67			○						
No-wake mode switch	68		○			○	○	○	○	○
No-wake/Cruise assist up SW	75									○
No-wake/Cruise assist down SW	76									○
Reverse switch	78						○		○	

		A	B	C	D	E	F	G	H	I
	Engine code WaveRunner	60E	60E 6B6	60T	6D3 6BU		6S5 6AN 6BH 6CN	6AA (WITH CATALYTIC CONVERTER)	6CS 6CR	
	Model name WaveRunner	FX1000 (F1B: '02MY)	FX1000(A) (F1B: '03-'05MY) FX1000(A) (F1Y: '06-'08MY) FX1100(A) (F1S: '04-'05MY) FX1100(A) (F1X: '06-'08MY)	GP1300 (F1G: '03-'08MY)	VX1100(A, B, C) (F1K: '05-'08MY) VX1100(A, B, C) (F2L: '09MY) VX1100(A, B, C) (F2N: '10-'12MY)		FX1800(A) (F1W: '08-'11MY) GX1800 (F2R: '09-'12MY) GX1800A (F2C: '09-'12MY) FY1800(A) (F2H: '09-'11MY) VX1800(A) (F2M: '11-'12MY)	FX1100(A) (F1X: '07-'08MY)	FA1800(A) (F2S: '12MY) FB1800(A) (F2T: '12MY)	
	Engine code		6B5 6P6			6S8		6AB (WITH CATALYTIC CONVERTER)		6AP 6CW
	Model name Sport Boat		SRT1000(A, B) (F1C: '03-'06MY) SXT1100(A, B, C, D, E, F, G, H) (F2A: '07-'09MY) FAT1100(A, B) (F2G: '08-'11MY)			FRT1100(A, B, C) (F1T: '06-'11MY) LAT1100(A, B) (F2K: '12MY)		SXT1100(A, B, C, D, E, F, G, H) (F2A: '08-'09MY) FAT1100(A, B) (F2G: '08-'10MY)		SXT1800(A, B, C, D, E, F, G, H, J) (F2D: '10-'12MY) XAT1800(A, B, C) (F2J: '12MY) RX1800(A, B, C, D) (F3A: '12MY)
Item	Diagnosis code									
Overheat alert	252	○	○		○	○	○	○	○	○
Low oil pressure alert	253	○	○		○	○	○	○	○	○
TPS (ETV)	124				○	○	○		○	○
TPS (ETV)	125				○	○	○		○	○
TPS (ETV)	126				○	○	○		○	○
TPS (ETV)	127				○	○	○		○	○
TPS (ETV)	128				○	○	○		○	○
APS (ETV)	131				○	○	○		○	○
APS (ETV)	132				○	○	○		○	○
APS (ETV)	133				○	○	○		○	○
APS (ETV)	134				○	○	○		○	○
APS (ETV)	135				○	○	○		○	○
ETV	112				○	○	○		○	○
ETV	113				○	○	○		○	○
ETV	114				○	○	○		○	○
ETV	115				○	○	○		○	○
ETV	116				○	○	○		○	○
ETV	117				○	○	○		○	○
ETV	118				○	○	○		○	○
ETV	119				○	○	○		○	○
ETV	121				○	○	○		○	○
ETV	122				○	○	○		○	○
ETV	123				○	○	○		○	○
ETV	129				○	○	○		○	○
ETV	136				○	○	○		○	○

		A	B	C	D	E	F	G	H	I
	Engine code WaveRunner	60E	60E 6B6	60T	6D3 6BU		6S5 6AN 6BH 6CN	6AA (WITH CATALYTIC CONVERTER)	6CS 6CR	
	Model name WaveRunner	FX1000 (F1B: '02MY)	FX1000(A) (F1B: '03-'05MY) FX1000(A) (F1Y: '06-'08MY) FX1100(A) (F1S: '04-'05MY) FX1100(A) (F1X: '06-'08MY)	GP1300 (F1G: '03-'08MY)	VX1100(A, B, C) (F1K: '05-'08MY) VX1100(A, B, C) (F2L: '09MY) VX1100(A, B, C) (F2N: '10-'12MY)		FX1800(A) (F1W: '08-'11MY) GX1800 (F2R: '09-'12MY) GX1800A (F2C: '09-'12MY) FY1800(A) (F2H: '09-'11MY) VX1800(A) (F2M: '11-'12MY)	FX1100(A) (F1X: '07-'08MY)	FA1800(A) (F2S: '12MY) FB1800(A) (F2T: '12MY)	
	Engine code		6B5 6P6			6S8		6AB (WITH CATALYTIC CONVERTER)		6AP 6CW
	Model name Sport Boat		SRT1000(A, B) (F1C: '03-'06MY) SXT1100(A, B, C, D, E, F, G, H) (F2A: '07-'09MY) FAT1100(A, B) (F2G: '08-'11MY)			FRT1100(A, B, C) (F1T: '06-'11MY) LAT1100(A, B) (F2K: '12MY)		SXT1100(A, B, C, D, E, F, G, H) (F2A: '08-'09MY) FAT1100(A, B) (F2G: '08-'10MY)		SXT1800(A, B, C, D, E, F, G, H, J) (F2D: '10-'12MY) XAT1800(A, B, C) (F2J: '12MY) RX1800(A, B, C, D) (F3A: '12MY)
Item	Diagnosis code									
ETV	137				○	○	○		○	○
ETV	138				○	○	○		○	○
ETV	139				○	○	○		○	○
ETV	141				○	○	○		○	○
ETV	142				○	○	○		○	○
ETV	143				○	○	○		○	○
ETV	144				○	○	○		○	○
ETV	145				○	○	○		○	○

Engine operating hours

		A	B	C	D	E	F	G	H	I
	Engine code WaveRunner	60E	60E 6B6	60T	6D3 6BU		6S5 6AN 6BH 6CN	6AA (WITH CATALYTIC CONVERTER)	6CS 6CR	
	Model name WaveRunner	FX1000 (F1B: '02MY)	FX1000(A) (F1B: '03-'05MY) FX1000(A) (F1Y: '06-'08MY) FX1100(A) (F1S: '04-'05MY) FX1100(A) (F1X: '06-'08MY)	GP1300 (F1G: '03-'08MY)	VX1100(A, B, C) (F1K: '05-'08MY) VX1100(A, B, C) (F2L: '09MY) VX1100(A, B, C) (F2N: '10-'12MY)		FX1800(A) (F1W: '08-'11MY) GX1800 (F2R: '09-'12MY) GX1800A (F2C: '09-'12MY) FY1800(A) (F2H: '09-'11MY) VX1800(A) (F2M: '11-'12MY)	FX1100(A) (F1X: '07-'08MY)	FA1800(A) (F2S: '12MY) FB1800(A) (F2T: '12MY)	
	Engine code		6B5 6P6			6S8		6AB (WITH CATALYTIC CONVERTER)		6AP 6CW
	Model name Sport Boat		SRT1000(A, B) (F1C: '03-'06MY) SXT1100(A, B, C, D, E, F, G, H) (F2A: '07-'09MY) FAT1100(A, B) (F2G: '08-'11MY)			FRT1100(A, B, C) (F1T: '06-'11MY) LAT1100(A, B) (F2K: '12MY)		SXT1100(A, B, C, D, E, F, G, H) (F2A: '08-'09MY) FAT1100(A, B) (F2G: '08-'10MY)		SXT1800(A, B, C, D, E, F, G, H, J) (F2D: '10-'12MY) XAT1800(A, B, C) (F2J: '12MY) RX1800(A, B, C, D) (F3A: '12MY)
Engine speed	Operating hours									
– 2000 r/min	h	○	○	○	○	○	○	○	○	○
2000 – 4000 r/min	h	○	○	○	○	○	○	○	○	○
4000 – 6000 r/min	h	○	○	○	○	○	○	○	○	○
6000 – 8000 r/min	h	○	○	○	○	○	○	○	○	○
8000 – 10000 r/min	h	○	○		○	○	○	○	○	○
10000 – 12000 r/min	h	○	○		○	○	○	○	○	○
Total operating hours	h	○	○	○	○	○	○	○	○	○

Engine Monitor

		A	B	C	D	E	F	G	H	I
	Engine code WaveRunner	60E	60E 6B6	60T	6D3 6BU		6S5 6AN 6BH 6CN	6AA (WITH CATALYTIC CONVERTER)	6CS 6CR	
	Model name WaveRunner	FX1000 (F1B: '02MY)	FX1000(A) (F1B: '03-'05MY) FX1000(A) (F1Y: '06-'08MY) FX1100(A) (F1S: '04-'05MY) FX1100(A) (F1X: '06-'08MY)	GP1300 (F1G: '03-'08MY)	VX1100(A, B, C) (F1K: '05-'08MY) VX1100(A, B, C) (F2L: '09MY) VX1100(A, B, C) (F2N: '10-'12MY)		FX1800(A) (F1W: '08-'11MY) GX1800 (F2R: '09-'12MY) GX1800A (F2C: '09-'12MY) FY1800(A) (F2H: '09-'11MY) VX1800(A) (F2M: '11-'12MY)	FX1100(A) (F1X: '07-'08MY)	FA1800(A) (F2S: '12MY) FB1800(A) (F2T: '12MY)	
	Engine code		6B5 6P6			6S8		6AB (WITH CATALYTIC CONVERTER)		6AP 6CW
	Model name Sport Boat		SRT1000(A, B) (F1C: '03-'06MY) SXT1100(A, B, C, D, E, F, G, H) (F2A: '07-'09MY) FAT1100(A, B) (F2G: '08-'11MY)			FRT1100(A, B, C) (F1T: '06-'11MY) LAT1100(A, B) (F2K: '12MY)		SXT1100(A, B, C, D, E, F, G, H) (F2A: '08-'09MY) FAT1100(A, B) (F2G: '08-'10MY)		SXT1800(A, B, C, D, E, F, G, H, J) (F2D: '10-'12MY) XAT1800(A, B, C) (F2J: '12MY) RX1800(A, B, C, D) (F3A: '12MY)
Item	Unit/state									
Engine speed	r/min	○	○	○	○	○	○	○	○	○
Intake air pressure	kPa	○	○		○	○	○	○	○	○
Intake air pressure	inHg	○	○		○	○	○	○	○	○
TPS1	V	○	○	○	○	○	○	○	○	○
Throttle valve opening angle	deg	○	○	○	○	○	○	○	○	○
TPS2	V				○	○	○		○	○
APS1	V				○	○	○		○	○
APS2	V				○	○	○		○	○
Atmospheric pressure	hPa	○	○	○	○	○	○	○	○	○
Atmospheric pressure	inHg	○	○	○	○	○	○	○	○	○
Battery voltage	V	○	○	○	○	○	○	○	○	○
Fuel injection duration	ms	○	○	○	○	○	○	○	○	○
Ignition timing	deg	○	○	○	○	○	○	○	○	○
Cooling water temperature	℃			○						
Cooling water temperature	℉			○						
Engine temperature	℃	○	○		○	○	○	○	○	○
Engine temperature	℉	○	○		○	○	○	○	○	○
Intake air temperature	℃	○	○	○	○	○	○	○	○	○
Intake air temperature	℉	○	○	○	○	○	○	○	○	○
Bypass valve motor/Stepping motor	step		○	○				○		
EX. manifold temperature	℃			○				○		
EX. manifold temperature	℉			○				○		
EX. manifold water temperature	℃			○			○	○	○	○

		A	B	C	D	E	F	G	H	I
	Engine code WaveRunner	60E	60E 6B6	60T	6D3 6BU		6S5 6AN 6BH 6CN	6AA (WITH CATALYTIC CONVERTER)	6CS 6CR	
	Model name WaveRunner	FX1000 (F1B: '02MY)	FX1000(A) (F1B: '03-'05MY) FX1000(A) (F1Y: '06-'08MY) FX1100(A) (F1S: '04-'05MY) FX1100(A) (F1X: '06-'08MY)	GP1300 (F1G: '03-'08MY)	VX1100(A, B, C) (F1K: '05-'08MY) VX1100(A, B, C) (F2L: '09MY) VX1100(A, B, C) (F2N: '10-'12MY)		FX1800(A) (F1W: '08-'11MY) GX1800 (F2R: '09-'12MY) GX1800A (F2C: '09-'12MY) FY1800(A) (F2H: '09-'11MY) VX1800(A) (F2M: '11-'12MY)	FX1100(A) (F1X: '07-'08MY)	FA1800(A) (F2S: '12MY) FB1800(A) (F2T: '12MY)	
	Engine code		6B5 6P6			6S8		6AB (WITH CATALYTIC CONVERTER)		6AP 6CW
	Model name Sport Boat		SRT1000(A, B) (F1C: '03-'06MY) SXT1100(A, B, C, D, E, F, G, H) (F2A: '07-'09MY) FAT1100(A, B) (F2G: '08-'11MY)			FRT1100(A, B, C) (F1T: '06-'11MY) LAT1100(A, B) (F2K: '12MY)		SXT1100(A, B, C, D, E, F, G, H) (F2A: '08-'09MY) FAT1100(A, B) (F2G: '08-'10MY)		SXT1800(A, B, C, D, E, F, G, H, J) (F2D: '10-'12MY) XAT1800(A, B, C) (F2J: '12MY) RX1800(A, B, C, D) (F3A: '12MY)
Item	Unit/state									
EX. manifold water temperature	°F			○			○	○	○	○
YPVS	deg			○						
Engine start switch	ON/OFF				○	○	○		○	○
Engine shut-off switch	ON/OFF	○	○	○	○	○	○	○	○	○
Thermoswitch	ON/OFF	○	○		○	○	○	○	○	○
Main relay	ON/OFF				○	○	○		○	○
ETV relay	ON/OFF				○	○	○		○	○
Fuel pump relay	ON/OFF				○	○	○		○	○
Oil pressure switch	ON/OFF	○	○		○	○	○	○	○	○
Slant detection switch	ON/OFF	○	○	○	○		○	○	○	
Steering switch	ON/OFF		○	○	○		○	○	○	
Throttle switch	ON/OFF			○						
No-wake mode switch	ON/OFF					○	○	○	○	
Cruise assist set switch	ON/OFF						○		○	
Cruise assist up switch	ON/OFF						○		○	
Cruise assist down switch	ON/OFF						○		○	
Reverse switch	ON/OFF						○		○	○
No-wake/Cruise assist SW (+)	ON/OFF									○
No-wake/Cruise assist SW (-)	ON/OFF									○
APS full closed switch	ON/OFF								○	

Component Test

		A	B	C	D	E	F	G	H	I
	Engine code WaveRunner	60E	60E 6B6	60T	6D3 6BU		6S5 6AN 6BH 6CN	6AA (WITH CATALYTIC CONVERTER)	6CS 6CR	
	Model name WaveRunner	FX1000 (F1B: '02MY)	FX1000(A) (F1B: '03-'05MY) FX1000(A) (F1Y: '06-'08MY) FX1100(A) (F1S: '04-'05MY) FX1100(A) (F1X: '06-'08MY)	GP1300 (F1G: '03-'08MY)	VX1100(A, B, C) (F1K: '05-'08MY) VX1100(A, B, C) (F2L: '09MY) VX1100(A, B, C) (F2N: '10-'12MY)		FX1800(A) (F1W: '08-'11MY) GX1800 (F2R: '09-'12MY) GX1800A (F2C: '09-'12MY) FY1800(A) (F2H: '09-'11MY) VX1800(A) (F2M: '11-'12MY)	FX1100(A) (F1X: '07-'08MY)	FA1800(A) (F2S: '12MY) FB1800(A) (F2T: '12MY)	
	Engine code		6B5 6P6			6S8		6AB (WITH CATALYTIC CONVERTER)		6AP 6CW
	Model name Sport Boat		SRT1000(A, B) (F1C: '03-'06MY) SXT1100(A, B, C, D, E, F, G, H) (F2A: '07-'09MY) FAT1100(A, B) (F2G: '08-'11MY)			FRT1100(A, B, C) (F1T: '06-'11MY) LAT1100(A, B) (F2K: '12MY)		SXT1100(A, B, C, D, E, F, G, H) (F2A: '08-'09MY) FAT1100(A, B) (F2G: '08-'10MY)		SXT1800(A, B, C, D, E, F, G, H, J) (F2D: '10-'12MY) XAT1800(A, B, C) (F2J: '12MY) RX1800(A, B, C, D) (F3A: '12MY)
Stationary Test Item	Test type									
Activate ignition coil #1	Activation test			○	○	○	○		○	○
Activate ignition coil #2	Activation test			○	○	○	○		○	○
Activate ignition coil #3	Activation test			○	○	○	○		○	○
Activate ignition coil #4	Activation test				○	○	○		○	○
Activate ignition coil: #1 & 4	Activation test	○	○					○		
Activate ignition coil: #2 & 3	Activation test	○	○					○		
Activate injector #1	Activation test	○	○	○	○	○	○	○	○	○
Activate injector #2	Activation test	○	○	○	○	○	○	○	○	○
Activate injector #3	Activation test	○	○	○	○	○	○	○	○	○
Activate injector #4	Activation test	○	○		○	○	○	○	○	○
Activate electric fuel pump	Activation test	○	○	○	○	○	○	○	○	○
Activate bypass valve motor Activate stepping motor	Activation test		○	○				○		
YPVS	Activation test			○						
Active Test Item	Test type									
Drop cylinder #1	Drop test	○	○	○	○	○	○	○	○	○
Drop cylinder #2	Drop test	○	○	○	○	○	○	○	○	○
Drop cylinder #3	Drop test	○	○	○	○	○	○	○	○	○
Drop cylinder #4	Drop test	○	○		○	○	○	○	○	○

Logger Graph

		A	B	C	D	E	F	G	H	I
	Engine code WaveRunner	60E	60E 6B6	60T	6D3 6BU		6S5 6AN 6BH 6CN	6AA (WITH CATALYTIC CONVERTER)	6CS 6CR	
	Model name WaveRunner	FX1000 (F1B: '02MY)	FX1000(A) (F1B: '03-'05MY) FX1000(A) (F1Y: '06-'08MY) FX1100(A) (F1S: '04-'05MY) FX1100(A) (F1X: '06-'08MY)	GP1300 (F1G: '03-'08MY)	VX1100(A, B, C) (F1K: '05-'08MY) VX1100(A, B, C) (F2L: '09MY) VX1100(A, B, C) (F2N: '10-'12MY)		FX1800(A) (F1W: '08-'11MY) GX1800 (F2R: '09-'12MY) GX1800A (F2C: '09-'12MY) FY1800(A) (F2H: '09-'11MY) VX1800(A) (F2M: '11-'12MY)	FX1100(A) (F1X: '07-'08MY)	FA1800(A) (F2S: '12MY) FB1800(A) (F2T: '12MY)	
	Engine code		6B5 6P6			6S8		6AB (WITH CATALYTIC CONVERTER)		6AP 6CW
	Model name Sport Boat		SRT1000(A, B) (F1C: '03-'06MY) SXT1100(A, B, C, D, E, F, G, H) (F2A: '07-'09MY) FAT1100(A, B) (F2G: '08-'11MY)			FRT1100(A, B, C) (F1T: '06-'11MY) LAT1100(A, B) (F2K: '12MY)		SXT1100(A, B, C, D, E, F, G, H) (F2A: '08-'09MY) FAT1100(A, B) (F2G: '08-'10MY)		SXT1800(A, B, C, D, E, F, G, H, J) (F2D: '10-'12MY) XAT1800(A, B, C) (F2J: '12MY) RX1800(A, B, C, D) (F3A: '12MY)
Item	Unit/state									
Engine speed	r/min	○	○	○	○	○	○	○	○	○
Battery voltage	V	○	○	○	○	○	○	○	○	○
TPS	V	○	○	○	○	○	○	○	○	○
Cooling water temperature	℃			○						
Engine temperature	℃				○	○	○		○	○
Engine temperature	℃	○	○					○		
EX. manifold water temperature	℃			○						
Intake air pressure	kPa	○	○		○	○	○	○	○	○
Oil pressure switch	ON/OFF	○	○		○	○	○	○	○	○
Stepping motor	step			○						

ECM Rec Graph

		A	B	C	D	E	F	G	H	I
	Engine code WaveRunner	60E	60E 6B6	60T	6D3 6BU		6S5 6AN 6BH 6CN	6AA (WITH CATALYTIC CONVERTER)	6CS 6CR	
	Model name WaveRunner	FX1000 (F1B: '02MY)	FX1000(A) (F1B: '03-'05MY) FX1000(A) (F1Y: '06-'08MY) FX1100(A) (F1S: '04-'05MY) FX1100(A) (F1X: '06-'08MY)	GP1300 (F1G: '03-'08MY)	VX1100(A, B, C) (F1K: '05-'08MY) VX1100(A, B, C) (F2L: '09MY) VX1100(A, B, C) (F2N: '10-'12MY)		FX1800(A) (F1W: '08-'11MY) GX1800 (F2R: '09-'12MY) GX1800A (F2C: '09-'12MY) FY1800(A) (F2H: '09-'11MY) VX1800(A) (F2M: '11-'12MY)	FX1100(A) (F1X: '07-'08MY)	FA1800(A) (F2S: '12MY) FB1800(A) (F2T: '12MY)	
	Engine code		6B5 6P6			6S8		6AB (WITH CATALYTIC CONVERTER)		6AP 6CW
	Model name Sport Boat		SRT1000(A, B) (F1C: '03-'06MY) SXT1100(A, B, C, D, E, F, G, H) (F2A: '07-'09MY) FAT1100(A, B) (F2G: '08-'11MY)			FRT1100(A, B, C) (F1T: '06-'11MY) LAT1100(A, B) (F2K: '12MY)		SXT1100(A, B, C, D, E, F, G, H) (F2A: '08-'09MY) FAT1100(A, B) (F2G: '08-'10MY)		SXT1800(A, B, C, D, E, F, G, H, J) (F2D: '10-'12MY) XAT1800(A, B, C) (F2J: '12MY) RX1800(A, B, C, D) (F3A: '12MY)
Item	Unit/state									
Engine speed	r/min				○	○	○		○	○
APS1	V				○	○	○		○	○
APS2	V				○	○	○		○	○
Steering sensor	V				○	○	○		○	○
TPS1	V				○	○	○		○	○
TPS2	V				○	○	○		○	○
Intake air pressure	kPa				○	○	○		○	○
Battery voltage	V				○	○	○		○	○
Target TPS voltage	V				○	○	○		○	○
Ref. TPS voltage	V				○	○	○		○	○
Ref. APS voltage	V				○	○	○		○	○
Target TPS voltage for ISC	V				○	○	○		○	○
Total hours of operation	h				○	○	○		○	○
Trigger	h				○	○	○		○	○
Cord	—				○	○	○		○	○
Engine stop mode	ON/OFF				○	○	○		○	○
Engine start mode	ON/OFF				○	○	○		○	○
SW-activated engine stop mode	ON/OFF				○	○	○		○	○
Engine shut-off switch	ON/OFF				○	○	○		○	○
Main relay	ON/OFF				○	○	○		○	○
ETV relay	ON/OFF				○	○	○		○	○
Thermoswitch	ON/OFF				○	○	○		○	○
Oil pressure switch	ON/OFF				○	○	○		○	○

		A	B	C	D	E	F	G	H	I
	Engine code WaveRunner	60E	60E 6B6	60T	6D3 6BU		6S5 6AN 6BH 6CN	6AA (WITH CATALYTIC CONVERTER)	6CS 6CR	
	Model name WaveRunner	FX1000 (F1B: '02MY)	FX1000(A) (F1B: '03-'05MY) FX1000(A) (F1Y: '06-'08MY) FX1100(A) (F1S: '04-'05MY) FX1100(A) (F1X: '06-'08MY)	GP1300 (F1G: '03-'08MY)	VX1100(A, B, C) (F1K: '05-'08MY) VX1100(A, B, C) (F2L: '09MY) VX1100(A, B, C) (F2N: '10-'12MY)		FX1800(A) (F1W: '08-'11MY) GX1800 (F2R: '09-'12MY) GX1800A (F2C: '09-'12MY) FY1800(A) (F2H: '09-'11MY) VX1800(A) (F2M: '11-'12MY)	FX1100(A) (F1X: '07-'08MY)	FA1800(A) (F2S: '12MY) FB1800(A) (F2T: '12MY)	
	Engine code		6B5 6P6			6S8		6AB (WITH CATALYTIC CONVERTER)		6AP 6CW
	Model name Sport Boat		SRT1000(A, B) (F1C: '03-'06MY) SXT1100(A, B, C, D, E, F, G, H) (F2A: '07-'09MY) FAT1100(A, B) (F2G: '08-'11MY)			FRT1100(A, B, C) (F1T: '06-'11MY) LAT1100(A, B) (F2K: '12MY)		SXT1100(A, B, C, D, E, F, G, H) (F2A: '08-'09MY) FAT1100(A, B) (F2G: '08-'10MY)		SXT1800(A, B, C, D, E, F, G, H, J) (F2D: '10-'12MY) XAT1800(A, B, C) (F2J: '12MY) RX1800(A, B, C, D) (F3A: '12MY)
Item	Unit/state									
OTS mode	ON/OFF						○		○	○
Cruise assist mode	ON/OFF						○		○	○
Reverse mode	ON/OFF						○		○	○
No-wake mode switch	ON/OFF						○		○	○
Low-RPM mode	ON/OFF						○		○	○
WARNING	ON/OFF						○		○	○
ETV limit	ON/OFF						○		○	○

